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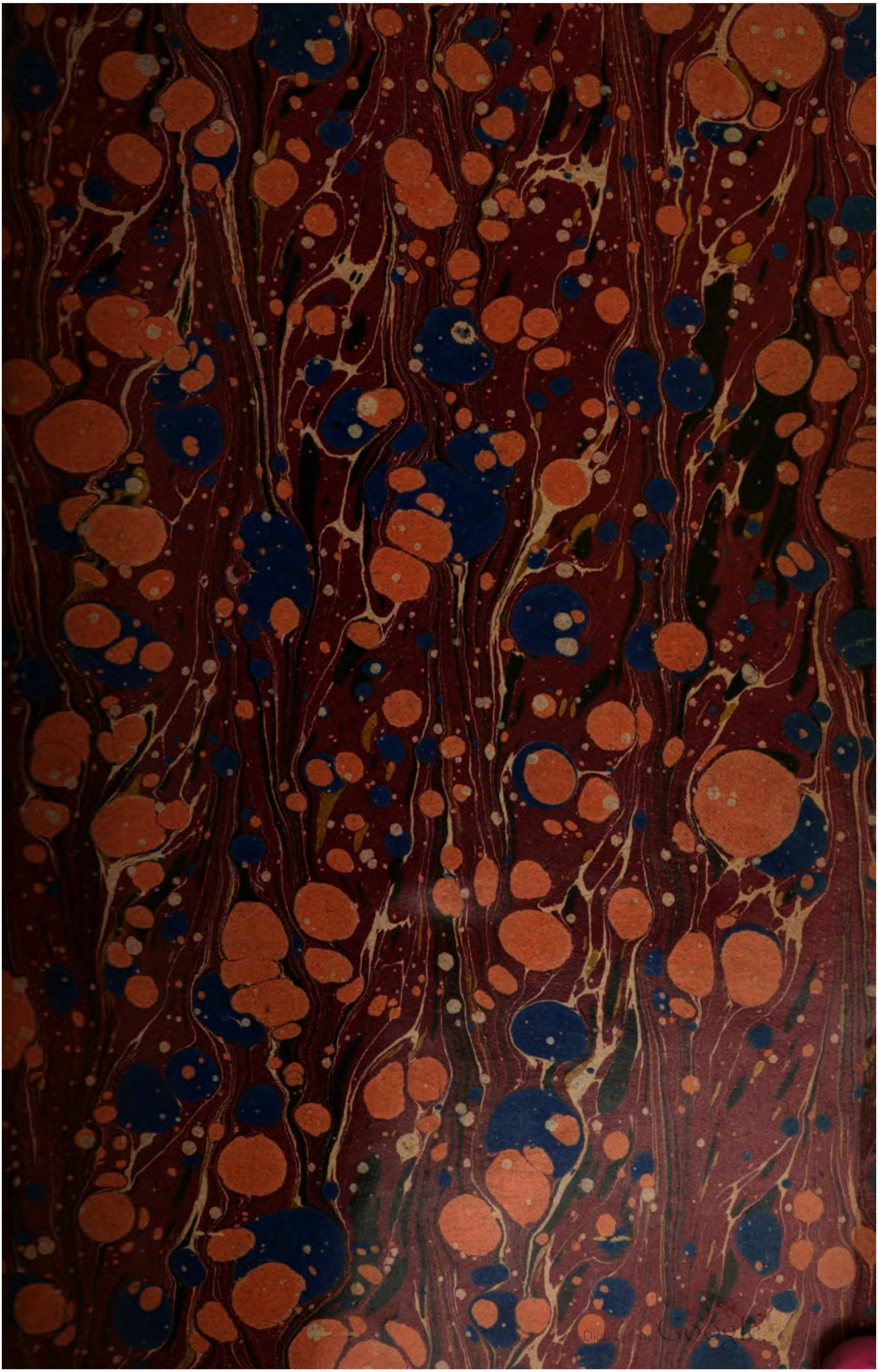

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THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. I.—JULY, 1869.

PREVENTION OF THE MISUSE OF POISONS.

From remote periods of antiquity up to the present time the dread of poison has influenced men's minds to a greater or less extent, sometimes affecting whole classes of the community among whom a wide-spread suspicion of evil design has arisen where confidence ought to exist, and at other times occurring as the result of some fatal accident, or the perpetration of an exceptional crime. The public naturally look to those who are entrusted with the safe-keeping, the sale, and the dispensing of poisons, for the adoption of such special precautions as may be suggested by cases, when they occur, which present any marked or peculiar features, and it is important, therefore, that such cases should be brought prominently under the notice of those who may profit by the study of them. Although we are by no means disposed to admit that the prevention of poisoning, by design or misadventure, is the only or even the principal object, the furtherance of which may be expected to result from the operation of the laws relating to the practice of pharmacy, yet the Act of last year being ostensibly designed "to regulate the sale of poisons," it is incumbent on those who have the carrying of the law into effect to see that all that is possible is accomplished for the protection of the public, not only by the means indicated in the Act, but also by any other means with which those can be supplemented.

There are two cases reported in another part of this Journal which present some points to which the attention of dispensing chemists may be profitably directed. These cases have both excited a great amount of public interest, on account of the circumstances attending them, and the prominent positions occupied by the unfortunate gentlemen whose lives have been sacrificed.

Mr. Guinness, of Dublin, had been for some time suffering from general debility and a weak action of the heart, and his medical attendant had prescribed for him a mixture, the prescription for which was as follows:—

"℞ Ammoniæ Carbonat. ʒij
Tinct. Cinchon. Comp. fʒss
Aq. Cinnamomi f℥j
Infus. Cinchonæ flav. f℥ivss
M. Sumat f℥j cum fʒss succ. limon. recent. bis in die.
Send lemon juice."

This prescription had been prepared at one of the leading dispensing establishments in Dubin, and the patient having repeatedly taken the medicine was acquainted with its appearance and other properties. A fresh supply of the medicine having been obtained, it was observed to be different in appearance from what it had been previously. Not only the patient, but also a clerk in the office, observed this difference, and Mr. Guinness took it back to the establishment where it had been prepared, and had it made up again. The colour was this time more like what it had originally been, and a dose of it was taken, which caused the death of the patient in a few minutes. It was found that cyanide of potassium had been accidentally substituted for carbonate of ammonia, so that the fatal dose contained twenty grains of a powerfully poisonous salt, which mixed with the lemon juice would evolve hydrocyanic acid. The quantity of cyanide of potassium in the dose, if pure, would represent 415 grains of the diluted hydrocyanic acid of the Pharmacopœia; and allowing for the impurities generally present in commercial cyanide of potassium, there would still have been present probably three-quarters of an ounce of prussic acid of the Pharmacopœia strength.

With reference to this part of the case the first impression produced is one of surprise that the patient, after having his suspicions excited, should have taken the fatal dose, which must have differed essentially from the medicine, ostensibly the same, which he had previously used. But no doubt his suspicions were to a great extent removed after he had called the attention of the dispenser to the subject, and had a fresh mixture made. And then the presence of carbonate of potash in the commercial cyanide of potassium, which we presume was used, would afford an effervescence with the lemon juice, similar, if not equal, to that caused by carbonate of ammonia. These considerations may serve to account for the fact that the medicine was taken, although there were sufficient grounds for suspecting that there was something wrong in it.

But now turning to the dispensing establishment where the medicine was prepared. This was one of the first houses in Dublin, and the arrangements adopted in the establishment for preventing mistakes such as that which occurred, appear, as described by one of the firm, to be perfectly good; but in two respects the rules of the house had been broken through. In the first place, a stone jar, containing cyanide of potassium, was unlabelled and out of its place. This indicates a great want of attention with reference to a most important provision. Then, in the next place, the bottle for carbonate of ammonia used in dispensing being empty, was given to a porter to be filled, and the filling of the bottle was performed without the presence of a second person, whose duty it would have been, according to the rules, to see that it was properly filled. The porter finding the jar of cyanide of potassium, mistook this for carbonate of ammonia, and filled the bottle with the poisonous salt, which was afterwards used by the dispenser for carbonate of ammonia in making the mixture. It is difficult to understand how two persons accustomed to the handling of these substances could have made this mistake, and especially when it is considered that the attention of the dispenser was called to a difference in the appearance of the medicine, which he was required to make up a second time, on the assumption that some mistake had been made. We fully admit the force of the statement made in a recent number of the 'British Medical Journal,' that this case forcibly illustrates, with reference to the education of pharmaceutists, "the necessity for such scientific culture and training in habits of observation as would render the mistaking of cyanide of potassium for carbonate of ammonia, or similar mistakes, almost impossible."

The other case to which we have alluded was that of the substitution of strychnia or a salt of strychnia for acetate of morphia, in preparing a solution, which being taken by a medical man in what would have been a full dose if correctly prepared, was converted into a poisonous dose not only by the unexplained circumstance that the bottle labelled acetate of morphia contained strychnia, which was used in the preparation, but also by the substitution of the London Pharmacopœia process for that of the British Pharmacopœia. That a wholesale house should have sent out strychnia for acetate of morphia seems to indicate that there must have been something wrong here again in the labelling and keeping of the stores; and that a chemist and druggist should still continue to use the London Pharmacopœia as the standard authority for the preparation of medicines, being apparently ignorant of the existence of the British Pharmacopœia, which has superseded the other, indicates a deficiency in one of the requisite qualifications for a dispenser of medicines, of which we hope there may not be many examples.

THE REGISTER.

The production of a complete register of all persons in Great Britain who are engaged in carrying on the business of chemist and druggist or pharmaceutical chemist, as such business is usually conducted, including the sale and dispensing of the more powerful and so-called poisonous drugs, has long been considered an important desideratum, without which it would be difficult to make any satisfactory provision for a safer and better administration of medicine than has hitherto existed in this country. The Pharmacy Act of last year has provided for this want, and the Register, which gives the required information, is now before the public. We presume there are but few, if any, names omitted from this Register which have a legitimate claim to be there, for ample notice was given of the requirement of the law, sufficient time was allowed for registering, and no charge was made for doing so. It is more to be apprehended that some names may have found their way into the list which ought not to be there, for we have reason to believe that certificates have in some instances been signed without sufficient consideration of their purport and importance. The list, however, is subject to revision by the Council of the Pharmaceutical Society, who have the power of removing any name from the Register *provided they are satisfied* that the registration was procured by improper means.

The Register is in two parts, the first comprising pharmaceutical chemists, that is, those who either by examination or as members of the Pharmaceutical Society, are authorized to use certain titles indicating that they belong to the higher grade of chemists and druggists, and are exempted from the necessity of serving on juries; and the second including chemists and druggists of every grade, not excepting pharmaceutical chemists. It appears that the total number of names of all classes inserted in the general list is 11,638. We have thus for the first time ascertained on unquestionable authority how many there are, throughout England, Wales and Scotland, who claim to be chemists and druggists, keeping open shop for the compounding of the prescriptions of duly qualified medical practitioners, as certified by themselves, and by a magistrate or medical practitioner having knowledge of the fact. The Register however, gives something more than the aggregate number of chemists and druggists, it indicates how many of them, namely 2357, are pharmaceutical chemists, and of this class it also indicates that 1037, or nearly one-half, have passed the Major examination. There are besides 464 of those included in the general list who, although not pharmaceutical chemists, have passed the Minor examination of the Society, and 198 who have passed the Modified examination.

In former years there has been some discussion in this and other journals as to the number of persons engaged in the practice of pharmacy in this country. It has been estimated, by some of those who wished to represent the Pharmaceutical Society as a very small section of the trade, at as large a number as forty thousand, and we took some pains five or six years ago to show the absurdity of such a statement, appealing to the census returns in support of the view we took that six or eight thousand would more nearly represent the legitimate chemists and druggists in England and Wales, the data for estimating the numbers in Scotland and Ireland not being then accessible. Our calculation at that time was founded upon the census returns of 1861, which gave the number of chemists and druggists, including apprentices and assistants, in England and Wales, as 16,026, of which number 3388 consisted of persons under 20 years of age.

These latter may be assumed to have been apprentices, and deducting them from the total number we have 12,638 principals and assistants and apprentices above the age of 20. As this return related only to England and Wales, while our Register includes Scotland,—and as the census was taken in 1861, since which a considerable increase has taken place in the population, and no doubt a corresponding increase in the number of chemists and druggists,—the number of persons includes in the Register may be considered to accord with what might be expected from an examination of the census returns.

THE PHARMACY ACT AMENDMENT BILL.

The Bill of Lord Robert Montagu, intended to remove certain supposed disabilities inflicted on medical practitioners who are not Licentiates of the Society of Apothecaries, and Veterinary Surgeons in Scotland, passed through its various stages in the House of Commons, and has been for some time waiting a second reading in the Upper House. It has probably been delayed by the great question in the Session, the Irish Church Bill, and now that the excitement on that matter is subsiding, may soon come on for further consideration.

At the instance of Mr. Forster a clause was added to remedy the Assistants' grievance; and on the motion of Dr. Brewer a special provision respecting medicines compounded from the prescriptions of legally-qualified medical practitioners. This latter appears to be surplusage, as the Act of 1868 specially provides that medicines compounded by duly registered Chemists and Druggists, whether prepared from physicians' prescriptions or not, shall be considered duly labelled if sent out as Dr. Brewer now proposes. Some other trifling amendments may be made before the Bill becomes law.

THE ADULTERATION OF FOOD AND DRUGS BILL.

The second reading of the Bill to amend the Adulteration of Food or Drink Act (1860), which stood for the 10th of June, has been postponed to Wednesday, the 7th of July. We are glad to find that pharmacists in different parts of the country are interesting themselves with reference to this Bill, and endeavouring to get the term *medical* struck out from the specified qualifications for *analysts*, as we suggested in our last number. Those who are interested in the subject should communicate with their representatives in Parliament and urge them to insist on the proposed alteration when the Bill comes into Committee.

REPRINT OF THE BRITISH PHARMACOPŒIA.

The twenty thousand copies of the Pharmacopœia, which were printed in 1867, having been nearly all sold, and a considerable demand for the work still continuing, it has been found necessary to reprint it. In doing this the few typographical errors and omissions, which had been discovered since the original publication, have been corrected. All the copies recently sold have had a list of these corrections inserted on a slip of paper, so that purchasers might make the necessary alterations with a pen in the body of the work. A copy of the list has also appeared in the medical journals, and we now insert it here, to enable those of our readers, who have not otherwise been afforded the means of doing so, to make the corrections in their copies of the work.

At page 20, line 6 from bottom, *for* 10·14 *read* 11·14.
„ 130, line 17 from bottom, *for* 57 *read* 87.
„ 150, line 9 from bottom, *for* 8 *read* 28.
„ 193, line 4 from top, *for* $PbC_2H_3O_2$ *read* $Pb_2C_4H_6O_5$.
„ 400, bottom line, *for* Tart. Dil. *read* Tart.
„ 27, between lines 8 and 9 from bottom, *insert* Emplastrum Cantharidis.
„ 51, between lines 5 and 6 from bottom, *insert* Tinctura Cinchonæ Composita.
„ 51, between lines 6 and 7 from bottom, *insert* Spiritus Armoraciæ Compositus.
„ 114, beneath bottom line *insert* Unguentum Belladonnæ.
„ 171, after line 11 from top, *insert* Oleum Lini.
„ 231, between lines 3 and 4 from top, *insert* Suppositoria Plumbi Composita.
„ 304, bottom line, *for* 1 drachm *read* 60 grains.
„ 305, line 13 from top, *for* 1 drachm *read* 60 grains.

MUNIFICENT ENDOWMENT OF A SCHOOL FOR THE STUDY OF PRACTICAL CHEMISTRY.

Mr. James Young, the late proprietor of the extensive works at Bathgate, near Glasgow, and manufacturer of paraffin and paraffin oils, whose name, in fact, is intimately associated with this manufacture as the discoverer of the process by which these valuable products have for many years been produced from certain varieties of coal, is stated to have presented the sum of £10,000 to the Andersonian Institution, Glasgow, for the endowment of a school to be devoted to the study of practical chemistry.

THE FARADAY LECTURESHIP IN THE CHEMICAL SOCIETY.

The Chemical Society, having recently founded a Lectureship, partly commemorative of a late distinguished Fellow of the Society, Professor Faraday, and partly with the view of promoting intercourse and interchange of ideas between eminent foreign chemists and the chemists of this country, invited M. Dumas, of Paris, to deliver the first of these lectures, which it is expected will be followed by others from year to year. The great celebrity of Dumas' name, associated as it has been for half a century with various departments of theoretical and applied chemistry, and also with pharmacy (for he was originally a pharmacien), caused much interest to be felt in connection with this inaugural address, and as the new building which the Government is erecting for the Chemical Society at Burlington House is not yet completed, the use of the lecture-theatre of the Royal Institution in Albemarle Street was obtained for this occasion. The first address of the Faraday Lecturer was thus very appropriately delivered within the walls where Faraday and his early associates Sir Humphry Davy and Dr. Thomas Young had so often addressed crowded and aristocratic audiences.

The lecture was delivered on Thursday, the 17th of June, and the theatre was well filled with a highly appreciative audience; the fact of its being in a foreign language however, no doubt limited the attendance and prevented many from enjoying the rich intellectual feast which was thus provided.

The chair was taken by Professor Williamson, President of the Chemical

Society, who in a very appropriate manner introduced M. Dumas, and at the same time presented him with the Faraday medal, the possession of which is associated with the lectureship.

The lecture, which occupied an hour and twenty minutes, was delivered with great fluency and apparent ease. Without once faltering or failing for a word, and without any reference to notes, the distinguished chemist and orator, who we are informed (for we needed to be so informed) has passed his 70th year, delivered an address which may be pronounced a masterpiece of elocution. It is not easy to give a satisfactory summary of this oration, which must have been heard to be fully appreciated, and it certainly will not be readily forgotten by those who had the good fortune to be present. After expressing an eloquent eulogium on his late friend Faraday, and referring to the important labours and discoveries of the great philosopher, he reviewed the work of other eminent chemists of the past and of some of those then present, including among the former Lavoisier, Priestley, Dalton, Prout, etc., and among the latter Frankland, Williamson, Tyndall, and, above all, Graham. Tracing back to remote antiquity the early dawnings of science, he brought before his hearers a brief statement of some of the most important steps made in the progress of chemical knowledge. He thus compared the knowledge now possessed of the nature of matter and force with that of the ancient Greek philosophers, and showed how little we have really advanced in our knowledge on these points, notwithstanding the progress made in other respects, and especially in the power possessed by modern chemists of producing an infinite number of combinations of chemical atoms. The distinction between organic and inorganic chemistry, he observed, must soon end, as far as related to the productions of the chemist, but in one respect organic chemistry as the chemistry of organic nature would remain distinguished, as that which is associated with vitality. Numerous as were the productions of the chemist, and he predicted that they would become as numerous as the sands of the sea, yet none of these were endowed with life, nor was it within the power of mortal man to produce such. He concluded by referring to the limited extent of our real knowledge upon many points, and consequently the wide field still open for investigation and the discovery of truth.

PROPOSED NATIONAL FARADAY MEMORIAL.

A public meeting was held on Monday, the 21st of June, in the theatre of the Royal Institution, Albemarle Street, for the purpose of organizing the necessary arrangements for providing a fitting national memorial of the late Professor Faraday. His Royal Highness the Prince of Wales presided, and having expressed his high appreciation, not only of the services rendered by Faraday in the cause of science, but also of his character in all the relations of life, he described the steps which had already been taken in furtherance of the proposed object. The result of an application to the Government for the means of raising a national monument had been that, whilst it was admitted that the erection of a monument to Faraday was an object presenting strong claims upon the public, it would not be consistent with the established rule in such cases to apply the public funds of the country for such a purpose in reference to any private citizen, however eminent. It had, therefore, been decided to call this meeting, and to appeal directly to the public. General Sabine, President of the Royal Society, moved, and M. Dumas, of Paris, seconded, the first resolution, "That it is desirable that measures should be taken to provide a public memorial to Faraday." A committee was then appointed for carrying the resolution into effect, consisting of the Presidents and other representatives of all the leading scientific institutions and societies.

THE ART OF WRITING *PRÉCIS.*

BY JOSEPH INCE,
MEMBER OF THE ROYAL SOCIETY OF LITERATURE.

Contributions forwarded to this Journal have, of late, outrun the space available. Formerly (and specially during the autumn months) it was a source of some anxiety to raise sufficient matter; now, the new conditions under which pharmacy is placed, and the rise of kindred associations, have changed the aspect of affairs. London is not indifferent to the interests of the country, nor to the value of these affiliated societies; on the contrary, these organizations are the highest personal compliment that can be paid, if imitation be the sincerest flattery, and there is no right-hearted man who does not know that association is the electric spark which first creates and then conserves vitality.

Yet beyond doubt offence is given most unwillingly by the manner in which these "Provincial Transactions" are reported—the inexorable claims of space, not the Editor must be held responsible. Every year the difficulty will become more apparent, and larger demands for room must necessarily arise. Three remedies have been suggested.

First, the addition of an extra sheet. Devoutly is it to be hoped that such an element of weakness will never be introduced except in cases of extreme emergency.

At this moment it is not possible to wade through the various scientific Journals which appear at regular intervals, and under which our tables groan. The least tendency to dilution should carefully be avoided.

II. The issue of a second, Provincial Journal which might enter into friendly competition with our own. The scheme has met with unqualified disapproval whenever and wherever it has been mentioned; and as gold and silver are stamped with the Hall mark, so is it thought no Journal can have sterling merit which does not bear 'London' on its title-page. Knowing however the practice of the Continent, and that the little city of Antwerp, itself essentially commercial, produces a capital *Journal de Pharmacie,* we may hope to see the day when the spirit of Pharmaceutical literature shall rise higher than the smoke of Leeds, and superior to the damp influences of Liverpool.

A third remedy remains, capable of immediate application, and which for many reasons I earnestly desire to recommend—the Art of writing *Précis.*

An abstract is one thing, a *Précis* is another—the abstract is a talent within the easy reach of every educated person. The *précis* is an accomplishment which requires for its full mastery about two years.

There are two kinds of abstract—the first good up to a certain point. It consists in giving a summary of important facts or thoughts, and this when applied to books, is called Analysis. The second variety occurs where the *résumé* reflects the reporter's not the writer's views—Thus "Mr. Disraeli in his brilliant, but rather flippant manner, observed—" and in like one-sided criticism the public is presented with a garbled version of the debate. Some of our cheap newspapers adopt this method, which for its exercise involves neither skill, nor study—it may be reprobated as dishonest literature, and is beneath contempt. I need not recall the famous letter of Montalembert on this subject in which he contrasts the trick writing of the Paris Journals with the general fearless honesty of the English press.

Précis is the art of reporting in abstract, spoken or written words, retaining and reproducing the individual characteristics of the author.

Marvellous examples of this class of composition are daily to be found in the columns of the 'Times' paper, nor can any better guide to its acquirement be suggested. The writer just quoted, confessed his blank astonishment at the dexterity with which the essence of either a short speech or of an elaborate oration was conveyed in a few sentences. May I without presumption urge the recognition of a study which has been a source of personal pleasure, and the companion of many happy hours.

Moreover, as sundry pharmacists are anxious to discover what *we* in the metropolis say and do, it cannot be deemed unwarrantable should they be asked to return the compliment.

Let the student take a copy of the 'Times'; read a speech, and with the text before him, try and render it as *précis*. Next he may wing a bolder flight—let him after having read a speech, *précis* (please excuse the verb) as much as he can remember: lastly, let a friend read aloud while he on his part tries to *précis* as the speech proceeds. Comparing the three results with the 'Times' paper as a standard, at first extreme disappointment will be felt that that should prove so difficult which seemed so easy. But the reward is great, nor slow to come.

For an instant may I allude to the advantage of an intellectual pursuit which nvolving neither cost nor apparatus may be a spring of perpetual enjoyment, while it is obvious that no one can practise it as an art without manifest self-improvement. When an author will consent, rigidly and conscientiously to *précis* his own productions he will infallibly detect his repetitions of words, phrases and construction. Slowly (for it is a laborious process) these will be eliminated.

Many sentences break down altogether under the test of *précis*, because they convey no definite meaning; these will be withdrawn: weak paragraphs cannot be represented—strong ones will replace them: add to this, attention to the music of the wording, and style is lifted out of commonplace.

I have been told that such considerations are beyond the druggist's sphere—other things are said about as foolish. It is the duty of the pharmacist to accept this toil and not to overtask the patience of the reader, remembering always that every man in his own person should endeavour to exalt the order to which he may belong.

Style is not a heaven born gift, nor will it drop down on anybody from the clouds. It is hammered out by labour. The exquisite, almost too perfect sentences of Dumas to which so many listened recently with delight, are the result of plodding, never-wearying work. Such is the history of all success, of which I had selected many illustrations but they are unsuitable to these columns.

I humbly refer these thoughts to our excellent local secretaries and others whom they may concern.

At present what are termed Provincial Transactions are the least attractive portion of our Journal.

Is there a reason why we should not be made acquainted with the actual share members in the country take in the advance of Pharmacy? Why not let us have a faithful, well-executed *précis* of a Presidential Introductory Address, reflecting the matter, the mannerism and the *personality* of the author, instead of the full details of a set discourse, admirable in its place, but impossible to print.

Would it not be an improvement in a literary point of view if gentlemen when reported were not made to express themselves in precisely the same phraseology?

Goldsmith said to Johnson, "were you to describe fishes they would all talk like whales."

The art of writing *précis* would thus render essential service. Under its influence we shall gain a whole department of intrinsic interest, and no pages will be more eagerly perused than those containing the records of our great English towns; a change as striking as that which befell the barren island when Prospero waved his wand.

26, St. George's Place, Hyde Park Corner.

TRANSACTIONS

OF

THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *June 2nd*, 1869,

MR. SANDFORD IN THE CHAIR.

Present—Messrs. Abraham, Bottle, Bourdas, Brady, Carteighe, Deane, Dymond, Edwards, Evans, Haselden, Hills, Ince, Mackay, Morson, Orridge, Savage, Squire, Stoddart, and Williams.

This being the first Meeting after the Anniversary, and the minutes having been read and confirmed, the following were elected Officers of the Society for the ensuing year:—

Henry Sugden Evans	President.
Adolphus Frederick Haselden	Vice-President.
Thomas Hyde Hills	Treasurer.

Mr. Sandford then vacated the chair, and the President and Vice-President took their respective seats.

Moved by Mr. Deane, seconded by Mr. Orridge, resolved unanimously,—That this Council desire to place on record their high appreciation of the manner in which the office of President of the Society has been discharged by George Webb Sandford, Esq., during the last six years, and their sense of the debt of gratitude which is due to that gentleman from every person interested in the art of Pharmacy for his laborious, persevering, and successful exertions.

Whilst cordially congratulating Mr. Sandford upon that success, and testifying their acknowledgments for his important services, they wish to add their earnest hope that he may be long spared to enjoy health and prosperity, and to labour in the cause of the Pharmaceutical Society.

Elias Bremridge was re-appointed Secretary and Registrar.

Richard Bremridge was re-appointed Assistant Secretary.

The following Committees were appointed:—

General.—Messrs. Bourdas, Carteighe, Deane, Edwards, Ince, Morson, Orridge, Sandford, Savage, Squire, and Williams.

Finance and House.—Messrs. Bourdas, Carteighe, Orridge, and Williams.

Library, Museum, and Laboratory.—Messrs. Bourdas, Carteighe, Deane, Edwards, Hills, Ince, Morson, Sandford, Squire, and Williams.

Benevolent Fund.—Messrs. Bourdas, Carteighe, Hills, Orridge, Sandford, and Williams.

Parliamentary.—Messrs. Bourdas, Carteighe, Edwards, Hills, Morson, Orridge, Randall, Sandford, Squire, and Williams, with power to add to their number.

The following fourteen Pharmaceutical Chemists were nominated as Examiners for England and Wales:—Bird, Augustus, London; Carteighe, Michael, London; Cracknell, Charles, London; Darby, Stephen, London; Davenport, John T., London; Deane, Henry, Clapham; Edwards, George, Dartford; Gale, Samuel, London; Garle, John, Bickley, Kent; Hanbury, Daniel, London; Ince, Joseph, Knightsbridge; Morson, Thomas N. R., London; Southall, William, Birmingham; Squire, Peter, London.

On the motion of Mr. Carteighe, seconded by Mr. Savage, that a ballot be taken for the appointment of the Board of Examiners, the following twelve were elected and appointed:—Bird, Augustus; Carteighe, Michael; Cracknell, Charles; Darby, Stephen; Davenport, John T.; Deane, Henry; Edwards, George; Gale, Samuel; Garle, John; Hanbury, Daniel; Ince, Joseph; Southall, William.

The following Pharmaceutical Chemists were appointed Examiners for Scotland for the ensuing year:—Messrs. Ainslie, Aitken, D. R. Brown, Buchanan, Kemp, Mackay, and Young.

The President and Vice-President are on all Committees, ex officio, *and on the respective Boards of Examiners in London and Edinburgh.*

In accordance with the Bye-laws, Section 10, Clause 9, the Secretary was instructed to submit the names of the Examiners now appointed for England and Wales, and the Examiners appointed for Scotland to the Privy Council for approval.

Moved by Mr. Brady, seconded by Mr. Edwards, and resolved,—"That the travelling expenses of any Country Members, elected to the Board of Examiners, be defrayed by the Society, in the same way as those of Country Members of the Council."

Moved by Mr. Mackay, seconded by Mr. Orridge, resolved,—"That the list of Local Secretaries for the ensuing year now presented be approved; that the Secretary be requested to communicate with them accordingly, and to publish their names in the ensuing number of the Journal." *Vide* p. 15.

In reference to the following Resolution, passed at the late Annual General Meeting:—

"That as a result of the Pharmacy Act of 1868, it is desirable that the Minutes and Votes of future Meetings of Council be published monthly,"

It was moved by Mr. Hills, seconded by Mr. Morson, resolved,—"That the publication of the proceedings of the Council, from month to month, be entrusted to a Committee, consisting of the President, Vice-President, and Mr. Sandford."

Moved by Mr. Williams, seconded by Mr. Brady,

"1. That with a view to carry out the principle of the Resolution, passed at the April Council Meeting, by placing the future management of the Journal in the hands of one responsible Editor, the Secretary be instructed to advertise in the 'Times,' 'Athenæum,' and 'Chemical News,' inviting applications from gentlemen desiring to hold the office.

"2. That the salary of the Editor be £250 per annum.

"3. That Mr. Barnard be requested to accept the appointment of Sub-Editor at a salary of £100 per annum, and that he be authorized to carry on the Journal on his own responsibility until the appointment of the Editor."

The following Amendment was moved by Mr. Sandford, seconded by Mr. Mackay:—

"That Dr. Redwood be appointed Editor of the Pharmaceutical Journal for the ensuing year, with a stipend of £250 per annum, and that Mr. John Barnard be appointed Sub-Editor with a salary of £100 per annum."

The Amendment having been put, and the votes taken

For the Amendment,—

Abraham, John; Deane, Henry; Edwards, George; Evans, H. Sugden; Haselden, Adolphus F.; Hills, Thomas Hyde; Mackay, John; Morson, Thomas N. R.; Orridge, Benjamin B.; Sandford, George Webb.

Against—Bottle, Alexander; Bourdas, Isaiah; Brady, Henry B.; Carteighe, Michael; Dymond, George; Ince, Joseph; Savage, William Dawson; Squire, Peter; Stoddart, William Walter; Williams, John.

The numbers being equal (ten), the Chairman gave his casting vote in favour of the Amendment, which, having been put as a substantive motion, was carried.

Moved by Mr. Brady, seconded by Mr. Edwards, resolved,—"That an Address be delivered to the Students at the distribution of prizes and opening of the Session in October next. That Mr. Deane be requested to give the Address, and that ladies be admitted as on the last occasion."

The Regulations of the Board of Examiners, vide *page* 17, *were confirmed and adopted.*

The following Pharmaceutical Chemists were elected Members:—

Baxter, George, Worksop.
Chambers, James, Eastwood.
Histed, Edward, Brighton.

The following, having passed their respective examinations, were elected Associates of the Society:—

Beasley, Frederick.
Biluey, Joseph Thomas.
Butterworth, Henry.
Chase, Thomas, jun.
Christmas, William.
Coley, Samuel James.
Ellwood, Michael John.
Frobisher, Frederick.
Haffenden, Thomas.
Hairsine, Herbert Seaton.
Halliday, Henry Dudeney.
Harries, Thomas.
Jackson, Robert.
Linton, Ralph Tait.
Neame, Austin John.
Philp, Joseph.
Robinson, John T.
Stanley, Herbert.
Ward, John Slinger.
Warrior, Charles.

The following Chemists and Druggists, registered under the "Pharmacy Act, 1868," were elected —

MEMBERS.

TOWN.	CHRISTIAN & SURNAME.
Altrincham . . .	Siddeley, John.
Ashbourne . . .	Bradley, E. Silvester.
Barton-un.-Needwood	Pullin, William.
Bath	Wilson, Joseph.
Birmingham . . .	Richards, Francis.
Bulwell	Widdowson, Edwin.
Cheltenham . . .	Jeffrey, Thos. Ashley.
Chew Magna . . .	Milton, Thomas.
Chippenham . . .	Pinniger, William.
Colchester . . .	Cole, Frederic A.
" . . .	Hammerton, Edward.
Crewkerne . . .	Pearce, Joseph.
Edinburgh . . .	Napier, Alexander.
Great Yarmouth . .	Thurlby, George.
Hadleigh	Laslett, Alfred Kent.
Hertford	Adams, George.
High Wycombe . .	Loveland, Charles.
Idle	Hopton, Edwin.
Leamington . . .	Nuttall, Henry.
Llandudno . . .	Williams, Thomas.
Lymington . . .	Badcock, Henry.
Matlock Bath . .	Greaves, Joseph.
Middleton . . .	Roberts, John.
Newark-upon-Trent.	Quibell, T. Oliver.
Norwich	Robinson, James.
"	Fitch, John Robert.
Nottingham . . .	Dennis, John Lee.
Penarth	Procter, Richard.
Penydarran . . .	Evans, John.
Poole	Atkins, T. Williams.
Ramsay	Palmer, Fredk. Wm.
Red Hill	Foster, E. Maddocks.
Sheffield	Collier, Thomas.
Southport	Garside, Thomas.
Southsea	Sapp, John James.
Stony Stratford . .	Robinson, W. Howe.
Sutton	Potter, Herbert.
Thornbury . . .	Ellis, Chas. Edward.
Watford	Cottle, Alfred James.
Wrexham	Peters, Henry.

LONDON.

Barker, William Robert, 148, New Bond St.
Britain, John Wardell, 107, Hampstead Rd.
Goddard, George Edward, 37, Chapel Street, Belgrave Square.
Goodchild, Robert Stephen, Well Street, South Hackney.
Gorton, George, 144, High St., Whitechapel.
Lovely, Herbert, 8, Conyngham Terrace, Uxbridge Road.
Matthews, William, 12, Wigmore Street, Marylebone.
Millson, William, 172, Caledonian Road, N.
New, Walter William, 238, Essex Road, N.
Rawling, John Wray, 281, Hackney Road.
Smart, William, 27, Aldgate, E.C.
Smith, William, 3, Celbridge Place, W.
Walker, Byatt Augustus, 26, Clapham Road.
Willows, Jesse, 101, High Holborn.
Wilson, John Figgess, 281, Essex Road, N.

Note.—The following names were omitted from the list published in the April Journal:—

Edinburgh	Sang, Edward.
Ramsgate	Ward, Francis E.

BENEVOLENT FUND.

On the report and recommendation of the Benevolent Fund Committee, the following grants were made:—

The sum of ten pounds to a late member residing in London.

The sum of twenty pounds to the widow of a late member in Flintshire.

The sum of ten pounds to the widow of a late member at Leominster, and her name was placed on the list of candidates for an annuity.

Other applications for relief were deferred for further inquiry and consideration.

The Council having considered and determined as to the expediency (financially) of electing pensioners in October next,—

Resolved,—"That the Secretary be requested to announce in the usual channels that the Council will be prepared to grant two annuities of thirty pounds each in October next."

EXAMINATIONS IN LONDON.

June 11*th*, 1869.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, and Southall.

MODIFIED EXAMINATION.

Forty-eight candidates presented themselves; the following thirty-seven passed, and were duly registered as

CHEMISTS AND DRUGGISTS.

Arkle, William, London.
Barrow, James Horsfield, Pendleton.
Bingley, Frederick Beavis, London.
Brown, Edwin, Liverpool.
Birch, William, Gosport.
Butler, George Edward, Louth.
Clark, William George, Lowestoft.
Clarke, Richard Thomas, Forest Hill.
Cole, George, Jersey.
Croskell, James, London.
Cullen, Robert Henry, Paris.
Davis, Richard Rhys, Aberdare.
Edwards, Walter Belsey, London.
Fenny, John, Stockton.
Finch, Albert Henry, Cheltenham.
Greaves, James Alfred, Cardiff.
Harrison, John Cope, Birmingham.
Heward, Richard, London.
Hirst, Joseph, Ashton-under-Lyne.
Howse, William Frank, Blackheath.
Hoyle, John William, Hawkhurst.
Jeffrey, Edwin Basset, Tunbridge Wells.
Jessop, Josiah Henry, Bristol.
Jones, Hugh Lloyd, Liverpool.
Lambert, William R., Brighton.
Llewellyn, Richard, Merthyr.
Miller, James, Chorley.
Morgan, Frederick Henry, Kidderminster.
Morgan, William, Newtown.
Mycock, John Josiah, Cheltenham.
Nicholls, Joseph, London.
Parker, Alfred, Uttoxeter.
Peal, Charles James, London.
Searle, William George, Manchester.
Severs, Samuel Thomas, Leeds.
Welborn, Robert Walker, London.
Williams, Hugh, Liverpool.

June 16*th*, 1869.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, Ince, and Southall.

Twenty-five candidates presented themselves for the Major and Minor Examinations; the following twenty-three passed, and were duly registered:—

MAJOR (as Pharmaceutical Chemists).

Bishop, William Middlebrook, Worcester.
*Denney, Edwin James, Norwich.
*Dewson, Frederic Stokes, Birmingham.
Duberley, George Smith, London.
Harrison, John, Keswick.
*Hart, James, Manchester.
*Iredale, George, Leeds.
*Reade, Oswald Alan, Chester.

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* Passed in honours; eligible to compete for the Pereira Medal.

MINOR (as Chemists and Druggists).

*Clarke, Richard Feaver, Torquay.
Davies, Samuel Richard, Newcastle Emlyn.
Edwards, George, Chester.
Fletcher, Ashby Brackstone, Totton.
*Green, George Thomas, Bishop's Stortford.
Gudgen, Frederick George, Kimbolton.
Harvey, John William, Brighton.
Howlett, Henry John, Southsea.
Jeckell, Edward, Ipswich.
Marshall, George Thomas, Newcastle-on-Tyne.
Pattison, Thomas, Birmingham.
Ritson, John, Sunderland.
Spear, Robert, London.
Swain, William Thomas, Selby.
Williams, David Henry, Aberaman.

REGISTERED APPRENTICES AND STUDENTS.

NAME.	ADDRESS.	
Abbott, George	Messrs. Thompson and Capper	Liverpool.
Allis, Robert	Mr. Elsey	Horncastle.
Atkins, Thomas Lloyd Josiah	Mr. James	Dowlais.
Atkinson, Robert Wrigley		Manchester.
Barber, John Stenson	Mr. Ritchie	Derby.
Barnes, Edward	Mr. Baker	Cosham, Hants.
Barritt, Frederick Alfred	Mr. Barritt	Croydon.
Bascombe, Frederick	Mr. Groves	Weymouth.
Blackader, Henry William	Mr. Hayles	Portsea.
Bourne, Charles		Louth.
Bradshaw, Thomas Edward	Mr. Eggleton	Maidenhead.
Bradwell, John Heald	Mr. Ward	Sheffield Moor.
Brewitt, Alfred	Mr. Shadford	Spalding.
Caseby, Thomas	Messrs. Thompson and Capper	Liverpool.
Coles, Samuel John	Messrs. Thompson and Capper	Liverpool.
Compton, Arthur	Mr. Payne	Reigate.
Court, George Frederick	Mr. Witherington	Worcester.
Cowdry, Zebedee Thomas		Longlands, Sidcup.
Crust, Frederick James	Mr. Smith	Rye.
Depere, John Thomas	Mr. Shadford	Spalding.
Dunston, Alfred	Mr. Donnington	Spalding.
Ellis, Robert	Mr. Davies	Aberystwith.
Elmitt, John Henry	Mr. Lunn	Horncastle.
Green, George	Mr. Elsey	Horncastle.
Hall, Charles Spencer		Fareham.
Hammond, Walter	Mr. Carritt	Louth.
Hooper, William	Mr. Barritt	Croydon.
Horrod, Thomas Samuel	Mr. Savage	Lincoln.
Lloyd, Edward		Abergele.
Mann, William Foxen	Mr. Jackson	Nottingham.
Marshall, Francis William	Messrs. Thomas and Son	Boston.
Marten, Cruttenden	Messrs. Thompson and Capper	Liverpool.
Massey, Richard Francis	Mr. Medcalf	Lower Tooting.
Owen, William Henry	Mr. Owen	Newcastle-on-Tyne.
Ponsonby, John		Sinnington.
Purvis, Thomas Alexander	Mr. French	Gosport.
Richardson, Thomas Plowman	Mr. Garland	Blackburn.
Robinson, John		Hexham.
Rowe, John	Messrs. Fielder	Landport.
Saunders, Thomas Samuel	Mr. Sadgrove	Notting Hill.
Senior, William Furber	Mr. Brooks	Doncaster.
Smith, Charles Clapcot	Mr. Smith	Rye.

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* Passed in honours; eligible to compete for the Prize of Books.

Spencer, James	Mr. Jennings	Hereford.
Taylor, Henry Francis	Messrs. Stone and Son	Exeter.
Taylor, John James Salmon	Messrs. Gifford and Linder	London.
Thornton, Edward	Mr. Morris	Walsall.
Truman, Henry Vernon	Mr. Abbott	Nottingham.
Turner, Woodland Owen	Mr. Roberts	Bourne.
Walden, Robert Woolley	Mr. March	Newark-on-Trent.
Walter, George	Mr. Walter	Horncastle.
Waterworth, Alfred	Mr. Marsden	Preston.
Williamson, Thomas Umbers	Mr. Hinds	Coventry.

June 23rd, 1869.

Present—Messrs. Bird, Carteighe, Davenport, Deane, Edwards, Evans, Gale, Garle, and Haselden.

Seventeen candidates presented themselves for Examination; the following twelve passed, and were duly registered as

PHARMACEUTICAL CHEMISTS.

Bates, Thomas, London.
Codd, Francis, Devonport.
Coles, John Coles, Coleshill.
Dyer, Frederick William, Trowbridge.
Eggleton, Benjamin, Maidenhead.
Hallawell, Joseph, Pendleton.
Johnson, Robert Allen, London.
Lamb, Thomas Campling, Chatham.
Sangster, Arthur, St. John's Wood.
Serpell, Samuel, Truro.
Swinn, Charles, Birmingham.
Wheeler, James, Southend.

EXAMINATION IN EDINBURGH,

June 10th, 1869.

Present—Messrs. Aitken, Kemp, Mackay, and Young.

MAJOR (registered as a Pharmaceutical Chemist).

Ellis, Bartlet, Banff.

MINOR (registered as Chemists and Druggists).

Clark, William, Newcastle-on-Tyne.
Glover, Joseph Imison, Newcastle-on-Tyne.
Munro, John Morrison, Aberdeen.

REGISTERED APPRENTICES AND STUDENTS.

NAME.		ADDRESS.
Badger, William		Linlithgow.
Black, James	Mr. Conacher	Markinch.

MODIFIED EXAMINATION.

The following passed their Examinations, and were registered as

CHEMISTS AND DRUGGISTS.

Dickie, James, Glasgow.
Nicol, John, Partick.
Paterson, Robert. Glasgow.
Stewart, James, Liverpool.
Walker, George, Turriff.

ERRATUM on p. 671, Vol. X.—The address of Thomas Adam should have been Glasgow, not Edinburgh.

LOCAL SECRETARIES, 1869–70.*

Aberdeen	Davidson, Charles
Abingdon	Smith, William
Altrincham	Hughes, John Taylor
Andover	Madgwick, Wm. B.
Ashton-under-Lyne	Bostock, William
Aylesbury	Dickins, Rowland
Banbury	Beesley, Thomas
Barnet	Huggins, George Thos.
Barnstaple	Goss, Samuel
Basingstoke	Sapp, Arkas
Bath	Pooley, John C.
Bedford	Cuthbert, John M.
Belper	Ashton, John
Berwick	Carr, William Graham
Beverley	Hobson, Charles
Bewdley	Newman, Robert
Bilston	Gray, Charles
Birkenhead	Jones, Charles
Birmingham	Southall, William
Blackburn	Pickup, Thos. Hartley
Bodmin	Williams, Joel D.
Bolton	Dutton, George
Boston	Marshall, Robert
Bradford (Yorks.)	Rogerson, Michael
Brecon	Bright, Philip
Bridgwater	Payne, Reuben Craven
Bridgnorth	Deighton, Thomas M.
Bridlington	Forge, Christopher
Bridport	Beach, James
Brighton	Gwatkin, James T.
Bristol	Stoddart, William W.
Bromley (Kent)	Baxter, William W.
Buckingham	Sirett, George
Burnley	Thomas, Richard
Bury St. Edmunds	Portway, John
Cambridge	Deck, Arthur
Canterbury	Harvey, Sidney
Cardiff	Joy, Francis Wm.
Cardigan	Davies, David
Carlisle	Moss, William
Carmarthen	Davies, Richard M.
Carnarvon	Griffith, Robert
Chatham	French, Gabriel
Chelmsford	Baker, Charles P.
Cheltenham	Smith, Nathaniel
Chester	Grindley, William
Chichester	Pratt, John
Chippenham	Westlake, Bernard
Christchurch	Judd, William
Cirencester	Skinner, Thomas
Cockermouth	Bowerbank, Joseph
Colchester	Manthorp, Samuel
Congleton	Goode, Charles
Coventry	Wyley, John
Croydon	Crafton, Ralph Caldwell
Darlington	Abbott, John Thomas
Denbigh	Bancroft, J. J. (*Ruthin*)
Deptford	Lockyer, George
Derby	Goodall, Henry
Devizes	Rowlands, William S.
Devonport	Row, Charles
Dewsbury	Gloyne, Thomas H.
Diss	Gostling, Thomas P.
Doncaster	Dunhill, William W.
Dorchester	Evans, Alfred J.
Dorking	Clark, William W.
Dover	Bottle, Alexander
Dudley	Hollier, Elliott
Dumfries	Allan, William
Dundee	Hardie, James
Dunfermline	Brown, William
Durham	Burdon, John
Edinburgh	Mackay, John
Evesham	Dingley, Richard L.
Exeter	Palk, John
Eye	Bishop, Robert
Falkirk	Murdoch, David
Falmouth	Newman, Walter
Fareham	Peat, Walter
Farnham	Crook, George
Forfar	Ranken, James A.
Gainsborough	Marshall, John F.
Glasgow	Kinninmont, Alexander
Gloucester	Pearce, Thomas
Grantham	Gamble, Richard
Gravesend	Beaumont, Wm. H.
Greenock	Alexander, James
Greenwich	Tugwell, William H.
Guernsey	Arnold, Adolphus
Guildford	Martin, Edward W.
Halifax	Shaw, Benjamin
Harrogate	Coupland, Joseph
Hartlepool	Corner, Robert
Harwich	Bevan, Charles F.
Hastings & St. Leonards	Bell, J. Alfred
Haverfordwest	Saunders, David P.
Hereford	Jennings, Reginald
Hertford	Lines, George
Hitchin	Ransom, William
Holywell	Jones, John
Horncastle	Elsey, John
Horsham	Williams, Philip
Huddersfield	King, William
Hull	Earle, Francis
Huntingdon	Provost, John P.
Ipswich	Wiggin, John
Ironbridge	Hartshorn, W. H. T.
Jersey	Ereaut, John, jun.

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* Local Secretaries are appointed in all Towns in Great Britain which return a Member or Members to Parliament; and in such other Towns as contain not less than Three Members of the Society.

Kendal	Severs, Joseph
Kidderminster	Bond, Charles
Kilmarnock	Rankin, William
King's Lynn	Langford, William
Kingston-on-Thames	Gould, Frederick
Knutsford	Silvester, Joseph
Launceston	Eyre, Thomas S.
Leamington	Jones, Samuel U.
Leeds	Reynolds, Richard
Leicester	Cooper, Thomas
Leighton Buzzard	Readman, William
Leominster	Davis, D. Frederick
Lewes	Martin, Thomas
Lincoln	Peppercorn, Benjamin
Liskeard	Eliott, Samuel
Liverpool	Abraham, John
Ludlow	Wells, Edwin
Lyme Regis	Thornton, Edward
Lymington	Allen, Adam U.
Macclesfield	Wright, George W.
Maidstone	Argles, Henry
Maldon	Wallworth, David
Manchester, Salford, &c.	Wilkinson, William
Mauritius	Baschet, George C.
Melbourne	Francis, Henry
Merthyr Tydfil	Smyth, Walter
Middlesborough	Taylor, William J.
Monmouth	Dawe, Sampson
Newark	Harvey, John
Newbury	Hickman, William
Newcastle-un.-Lyne	Cartwright, William
Newcastle-on-Tyne	Proctor, Barnard S.
Newport (I. Wight)	Orchard, Herbert J.
Newport (Mon.)	Phillips, John
Newtown	Owen, Edward
Northallerton	Warrior, William
Northampton	Barry, Edwin
Norwich	Sutton, Francis
Norwood	Baldock, John H.
Nottingham	Atherton, John H.
Odiham	Hornsby, John H.
Oldham	Hargraves, Henry L.
Oswestry	Smale, Richard B.
Oxford	Walsh, Edward
Paisley	Hatrick, William
Pembroke	John, David W.
Pembroke Dock	Saer, David Protheroe
Perth	Reid, Neil
Peterborough	Sturton, Richard
Petersfield	Edgeler, W. Bicknell
Plymouth	Balkwill, Alfred P.
Poole	Penney, William
Portsmouth, etc.	Rastrick, J. L. (*Southsea*)
Preston	Houghton, William
Ramsgate	Morton, Henry
Reading	Spokes, Peter
Reigate	Forbes, William
Retford	Baker, William
Richmond (Surrey)	Hopwood, Henry J. S.
Richmond (Yorks.)	Thompson, Thomas
Ripon	Judson, Thomas
Rochdale	Taylor, Edward
Rochester & Strood	Harris, Henry W.
Rothesay	Duncan, William
Rugby	Garrett, John C.
Ryde (I. Wight)	Wavell, John
Rye	Plomley, James F.
Salisbury	Atkins, Samuel R.
St. Alban's	Davenport, Edward
St. Austell	Geldard, John
St. Ives (Cornwall)	Young, Tonkin
Scarborough	Whitfield, John
Selby	Colton, Thomas
Shaftesbury	Powell, John
Sheerness	Rayner, William
Sheffield	Radley, William V.
Shields, North	Brown, William H.
Shields, South	Mays, Robert J. J.
Shrewsbury	Cross, William Gowen
Sleaford	Heald, Benjamin
Southampton	Palk, Edward
Southport	Cumine, Frederick H.
Spalding	Rhodes, Frank
Stafford	Averill, John
Stalybridge	Wardle, Wm. Henry
Stamford	Patterson, George
Stockport	Shaw, Alexander H.
Stockton	Brayshay, Wm. B.
Stoke-on-Trent	Adams, Jonathan H.
Stourbridge	Bland, John Handel
Stowmarket	Simpson, Thomas
Stroud	Blake, William F.
Sunderland	Nicholson, John J.
Swansea	Lloyd, John
Sydenham	Holloway, Thos. H.
Tamworth	Allkins, Thomas B.
Taunton	Prince, Henry
Tavistock	Gill, William
Tenby	Davies, Moses P.
Tenterden	Willsher, Stephen H.
Tewkesbury	Wilkes, Seth M.
Thirsk	Thompson, John
Tiverton	Bond, Lawrence V.
Torquay	Millar, F. C. Moss
Tottenham	Wall, Wm. James
Truro	James, John
Tunbridge Wells	Gardener, Charles
Wakefield	Gissing, Thomas W.
Wallingford	Payne, Sidney
Walsall	Humphries, Charles
Wandsworth	Nind, George
Wareham	Randall, Thomas
Warrington	Webster, Samuel M.
Warwick	Baly, James
Watford	Chater, Jonathan
Wednesbury	Gittoes, Samuel J.
Westbury	Taylor, Stephen
Weston-super-Mare	Rich, Thomas
Weymouth	Cole, Walter T.
Whitehaven	Kitchin, Archibald

Wigan	Barnish, Edwin H.	Worcester	Witherington, Thos.
Winchester	Powell, Edward	Wycombe	Furmston, Samuel C.
Windsor	Russell, Charles J. L.	Yarmouth, Great	Poll, William S.
Wolverhampton	Brevitt, William Y.	York	Davison, Ralph
Woolwich	Rastrick, John A.		

REGULATIONS OF THE BOARD OF EXAMINERS, CONFIRMED AND ADOPTED BY THE COUNCIL.

FOR THE EXAMINATION AND REGISTRATION OF PHARMACEUTICAL CHEMISTS, CHEMISTS AND DRUGGISTS, AND APPRENTICES OR STUDENTS, IN ACCORDANCE WITH 15 & 16 VICT. CAP. 56, AND 31 & 32 VICT. CAP. 121.

THE BOARD OF EXAMINERS IN LONDON

Meets for conducting the examinations on the third Wednesday in the month, excepting August and September, at 11 A.M.; and in May upon the fourth Wednesday.

THE BOARD OF EXAMINERS IN EDINBURGH

Meets as often as required. Notice is given in the 'Pharmaceutical Journal' when meetings will take place.

THE FIRST OR PRELIMINARY EXAMINATION.*

(For Registration as Apprentices or Students.)

Latin,—translation of a passage from the first book of Cæsar. ('*De Bello Gallico.*')
Latin Grammar.
English Grammar, Composition and Dictation.
The first four rules of arithmetic, simple and compound, vulgar fractions, and decimals.

Any Candidate residing at a distance of more than ten miles from London may, on applying to the Secretary, be supplied with instructions to enable him to be examined by any qualified person (*not having been his teacher*), appointed and approved by the Council.

The certificate of such examination, duly signed by the Examiner and delivered by him to the Secretary, will, if approved by the Board, entitle the candidate to be placed on the Register.

MINOR EXAMINATION.

(For Registration under the Pharmacy Act, 1868, as Chemists and Druggists.)

Candidates for this Examination must have passed the First or Preliminary Examination.

The following form the subjects of examination:—

Prescriptions.—The candidate is required to read without abbreviation autograph prescriptions; translate them into English; and render a literal as well as an appropriate translation of the directions for use.

Practical Dispensing.—To weigh, measure, and compound medicines; write the directions in concise language in a *neat and distinct* hand, correctly translate the prescription, and detect unusual doses; finally, to finish and properly direct each package

Pharmacy.—To recognize the preparations of the Pharmacopœia which are not of a definite chemical nature, such as extracts, tinctures, the simple and compound powders, etc.; to describe the composition of such as are compound, and give the proportions of the active ingredients.

The Candidate is required to possess a practical knowledge of the metrical system of Weights and Measures.

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* The Middle Class Examinations of Oxford, Cambridge, or Durham, and the Examination of the College of Preceptors, or of any legally constituted Examining Body of the United Kingdom, *provided Latin is included as one of the subjects*, are accepted in lieu of this examination.

Materia Medica.—To recognise specimens of roots, barks, leaves, fruits, resins, gums, animal substances, etc., used in medicine; give the botanical and zoological names of the plants, etc., yielding them, and the Natural Families to which they belong; name the countries and sources from which they are obtained, and the officinal preparations into which they enter, and judge the quality and freedom from adulteration or otherwise of the specimens.

Botany.—To recognize the more important indigenous medicinal plants. To possess a general knowledge of the elementary structure of plants, and the structure and distinctive characters of roots, stems, leaves, and their parts. To name and describe the various parts of the flower.

Chemistry.—To recognize the acids, oxides, salts, and other definite chemical bodies of the Pharmacopœia; to describe the processes by which they are produced, the composition of such as are compound, and explain the decompositions that occur in their production and admixture, by written equations or diagrams.

MAJOR EXAMINATION.

(For Registration as Pharmaceutical Chemists under the Pharmacy Act, 1852.)*

Candidates for this Examination must have passed the "Minor" Examination at least three months previously.

Prescriptions and Posology.—The candidate is required to render in good Latin, prescriptions written in English, to detect errors, and discover unusual doses.

Practical Dispensing.—The candidate is expected to possess a knowledge of the strength of the simple solutions used in medicine, and of the best excipients and methods of manipulation, for forming emulsions with oils, resins, balsams, and other substances, and for giving a good pilular condition to substances which are administered in that form; also to explain the changes which sometimes occur in prescribed medicines.

Pharmacy.—To describe the process by which any preparation of the Pharmacopœia, not having a definite chemical composition, is made, to explain the nature of maceration, percolation, sublimation, etc., and to be acquainted with published improved pharmaceutical processes.

Materia Medica.—The examination extends to the qualities of Drugs, the means of estimating these qualities, and of distinguishing the genuine from spurious. It comprises a knowledge of the active proximate constituents of important drugs, and of the methods of obtaining these in a separate state and testing their purity.

Botany.—This examination comprises an intimate acquaintance with the parts of the flower, fruit, and seed; the functions of the different organs of plants; a knowledge of the general principles of classification, and of the Linnæan and De Candolle's systems; a written diagnosis of the following Natural Orders:—Ranunculaceæ, Papaveraceæ, Cruciferæ, Malvaceæ, Leguminosæ, Rosaceæ, Cucurbitaceæ, Umbelliferæ, Compositæ, Gentianaceæ, Convolvulaceæ, Solanaceæ, Atropaceæ, Labiatæ, Scrophulariaceæ, Polygonaceæ, Euphorbiaceæ, Orchidaceæ, Iridaceæ, Liliaceæ, Melanthaceæ, Graminaceæ; and the reference to their respective Orders of such specimens as may be shown to him.

Chemistry.—The examination comprehends the laws of chemical combination, the nature and properties of the chemical elements and their compounds, especially those used in medicine or applied generally in the arts, explaining the different combinations and decompositions, by written equations or diagrams. · The determination practically, by means of tests, of the constituents of salts, the detection of impurities in medicinal chemicals, and the *volumetric* estimation of the strength of Pharmacopœia preparations.

The Candidate will be required to name the antidotes to be administered in cases of emergency, for the more ordinarily occurring poisons, and give a method for detecting the presence of them after death in the different parts of the body.

An elementary knowledge of the properties of Light, Heat, Electricity, and Magnetism is also required.

MODIFIED EXAMINATION FOR ASSISTANTS UNDER THE PHARMACY ACT, 1868, AS APPROVED BY THE PRIVY COUNCIL.

(For Registration as "Chemists and Druggists." *Registration Fee, One Guinea.*)

Prescriptions.—Candidates will be required to read Autograph Prescriptions, translate them into English, render a correct Translation of the Directions for Use, and detect Unusual Doses.

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* Exempt from service on all Juries and Inquests under Jury Act, 1862.

Practical Dispensing.—To weigh, measure, and compound Medicines, write the Directions in suitable language, finish and properly direct each Package.

Materia Medica and Quality of Specimens.—To recognize the Pharmacopœia Chemicals in frequent demand, and specimens of Roots, Barks, Leaves, Fruits, Resins, and Gums in ordinary use; the following Plants, either in a fresh or dried state, or from plates:—Belladonna, Stramonium, Hyoscyamus, Conium, Aconitum, Digitalis, and Sabina; also to estimate the quality of each specimen submitted and its freedom from adulteration.

Pharmacy.—To recognize the Preparations of the Pharmacopœia which are not of a definite Chemical Nature, such as Extracts, Tinctures, and Powders, and give the proportions of the more active ingredients.*

Candidates for the respective Examinations must give notice to the Registrar of their intention to present themselves, and pay the fees, at least ten days prior to the day of examination. Candidates for the Major, and Candidates for the Minor who have not passed the "First or Preliminary Examination," are required, the former, *for the* written examinations, the latter, for the said Preliminary Examination, to attend at 10 A.M. on the day preceding the meeting of the Board. *If a Candidate fail to pass either of the Examinations, the fee will be returned, less one guinea, but he will be admitted to a subsequent Examination, after an interval of three months, on giving the usual notice and payment of the full fee.*

EXAMINATION OR REGISTRATION FEES AND SUBSCRIPTIONS TO THE SOCIETY.

FEES.	£.	s.	d.	ANNUAL SUBSCRIPTIONS on becoming connected with the Society.	£.	s.	d.
First or Preliminary (Registered as *Apprentices or Students*)	2	2	0	Eligible, on application to the Council, to be elected *Apprentices or Students of the Society*	0	10	6
Minor (Registered as *Chemists and Druggists*)	3	3	0	Eligible, on application to the Council, to be elected *Associates of the Society*			
Or if not previously registered	5	5	0				
Major (Registered as *Pharmaceutical Chemists*)	5	5	0	Eligible, on application to the Council, to be elected *Members of the Society*. Or a Life Member's Commutation Fee *of Twenty Guineas.*	1	1	0
Or if not previously registered	10	10	0				

MEETING AT EDINBURGH.

A Meeting of the North British Branch of the Society was held in St. George's Hall, on Thursday evening, May 27th,

MR. AINSLIE, PRESIDENT, IN THE CHAIR.

There was a full attendance, and Dr. Gamgee read a paper entitled—

ON THE ALKALOIDS CONTAINED IN THE WOOD OF THE BEBEERU OR GREENHEART-TREE (*NECTANDRA RODIÆI*, *Schomburgk*).

BY DOUGLAS MACLAGAN, M.D., F.R.S.E.,

PROFESSOR OF MEDICAL JURISPRUDENCE IN THE UNIVERSITY OF EDINBURGH;

AND ARTHUR GAMGEE, M.D., F.R.S.E.

In this paper the authors state the preliminary results of their examination of the bases contained in the wood of the greenheart-tree. When the wood is subjected to a process similar to that recommended in the British Pharmacopœia for the preparation of sulphate of bebeerine from the bark of the tree, a mixture of the sulphates of several bases is obtained. The product does not differ in a marked manner from sulphate of bebeerine as it occurs in commerce.

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* Candidates having passed the Modified Examination, cannot become Pharmaceutical Chemists unless they also pass the Preliminary, the Minor, and the Major Examinations.

From the mixture of bases the authors separated, by repeated treatment with chloroform, a base which is very soluble in that menstruum. This base, when purified, occurs in the form of a white non-crystalline powder, possessed of an intensely bitter taste. It differs from bebeerine in the following particulars:—

1st. It fuses when placed in boiling water.

2nd. It is much less soluble in ether than bebeerine. 100 parts of pure ether, of density 0·715, dissolve 0·96 part of bebeerine. 100 parts of the same ether dissolve ·04 part of the new base.

3rd. When treated with strong sulphuric acid and binoxide of manganese, a magnificent green colour is first developed; this slowly passes into a violet of great beauty, not unlike that produced by the action of the same reagents on strychnine.

4th. The new base has a higher atomic weight than bebeerine. The mean of five determinations of the platinum in the platinum compound of this base showed the percentage of platinum to be 17·72. The mean of four ultimate analyses of the alkaloid gave the following numbers:—

Carbon	70·02
Hydrogen	6·73
Nitrogen	4·53
Oxygen	18·71
	100·00

To this new alkaloid the authors assign the formula $C_{20}H_{23}O_4N$ (C=12), and the name Nectandria.

	Calculated.	Found.
Carbon . . .	70 38	70·02
Hydrogen . .	6·74	6·73
Nitrogen . . .	4·10	4·53
Oxygen . . .	18·78	18·71
	100·00	100·00

The difference between the composition of bebeerine, as ascertained by Von Planta, and that of nectandria, may be seen by comparing their formulæ,—

Bebeerine	$C_{18}H_{21}O_3N$
Nectandria	$C_{20}H_{23}O_4N$

After separating nectandria from the mixed bases obtained from the wood, the authors succeeded in separating a base which is much more soluble in hot and cold water, and which is insoluble in chloroform. It is deposited from a boiling solution in the form of yellow nodules. Its taste is both bitter and astringent. It appears to have a lower molecular weight than either bebeerine or nectandria. The percentage of platinum in the platinum compound was found to be 20·3.

Besides this base the authors have ascertained the existence of a third, whose characters have, however, not yet been carefully determined.

The authors intend continuing their chemical investigations on these alkaloids, and examining their physiological and therapeutical action. They express their great obligations to the firm of Messrs. Macfarlane and Co., without whose generous aid the materials for the investigation could not have been obtained by them.

Some remarks having been made by Mr. D. R. Brown and others, a very cordial vote of thanks to Dr. Gamgee for his interesting communication was carried with acclamation.

The PRESIDENT then read his Valedictory Address.

Having referred to the subjects which had come before the scientific meetings in the course of the session, and to the very important event which had recently occurred in the passing of the Pharmacy Act of last year, allusion was made to the result of the examinations in Scotland, where it appears that nearly 200 young men have proved their fitness to fulfil the important duties they are required to perform in connection with pharmacy. With reference to this subject, the President said he would repeat a word of advice to students, given in their Journal a few months ago, to the effect that they should not attempt to do too much at once, but work steadily, systematically, and perseveringly at the subjects prescribed; and thus, little by little, but every little well done, they would ultimately raise a superstructure of knowledge on a broad and solid foundation, which would enable them in after-life to take a safe and creditable position as members of the pharmaceutical body, and to hold their own against all competitors.

At the close of the address, intimation was made of the annual meeting, and the arrangements for the library and museum during the summer months. Mr. Mackay also presented to the Society a proof-copy of an engraving of the late Jacob Bell, after Landseer, from Thomas H. Hills, Esq., London. Mr. M., in connection with this portrait, stated that Mr. Hills had, in the most handsome and liberal manner, paid the cost of engraving the picture, as well as printing the copies, and which it was the intention of Mr. Hills to hand over to the Society free of all expense. Copies in three stages would be offered for sale, the proceeds of which, it was understood, Mr. Hills would throw into a fund, with a view in some way to be afterwards fixed, to assist and encourage the educational department of the Society in London and Edinburgh. Subscription lists would therefore be opened in the course of the summer for those who wished to obtain a faithful likeness of the founder of our Society, and, when the sum was fairly realized, Mr. Hills would make known more definitely his wishes in regard to its disposal. Meanwhile Mr. M. proposed that a hearty vote of thanks should be recorded to Mr. Hills for his very valuable and liberal gift. This was carried unanimously, amidst loud applause. The meeting thereafter adjourned, after viewing the plate forming the Mackay Testimonial.

ANNUAL MEETING OF THE NORTH BRITISH BRANCH OF THE PHARMACEUTICAL SOCIETY.

The Annual Meeting of the Society in Edinburgh took place at Slaney's Douglas Hotel on Thursday evening, May 27; Mr. Ainslie, President, in the chair.

The SECRETARY having been called upon, read the following annual report:—

The scientific meetings during the past Session have been four in number, and were not without considerable interest to the Society. All were well attended, and the Council beg to offer their best thanks to those gentlemen who contributed papers.

The Library and Museum still continue to receive attention from the Council. Considerable additions are expected to be made to the former, previous to the commencement of next Session, while the latter will not only be rearranged, but opportunities afforded for any one connected with the Society examining the various specimens therein contained.

The most important event which has ever occurred in the history of the Society has been the passing of the Pharmacy Act of 1868. Ever since its foundation in 1841, there has been felt the greatest desire to improve the educational position of the pharmaceutist in Great Britain. The energy of many whose names will ever be fondly remembered, but who have long since passed away from their labours, gave a standing to the Association, which, under the fostering care and untiring zeal of the London Council, has resulted in giving the Pharmaceutical Society the power of examination under the compulsory Act of last session. All, therefore, who for the future may desire to become chemists and druggists, or dispensing chemists in the true sense of the word, must submit to the ordeal of examination, and thus be certified as capable of undertaking the responsibility attached to their position. It is true that, for a time, there was some difficulty in regard to medical men who, while not connected with the Society, still held diplomas in pharmacy and surgery, but these differences are now at an end, by the introduction by Government of an Amended Pharmacy Act, at present passing through Parliament, whereby the claims of such parties to keep open shop are recognized, although still amenable to all the operations in reference to the sale of poisons contained in the Act.

It may be gratifying to know that, after the passing of the Act, and during November and December, 107 appeared before the Examining Board in Edinburgh, while up to the present time, and since the commencement of the year, 82 more have been examined. The Council here have no hesitation in stating that the operation of the new Act must prove of incalculable benefit to all those who, in connection with dispensing medicines, really desire to know and practise pharmacy with some degree of credit to themselves and satisfaction to the public.

It is to be hoped that arrangements will be made here, during the approaching summer, for the admission of apprentices and others to Lectures on Chemistry, Botany, and Materia Medica for Session 1869–70. When these have been completed, due intimation will be made of the hours and fees in connection with such opportunities.

In reference to the Benevolent Fund it is pleasing to know that, during the past year, upwards of £800 have been distributed. When this Fund was first started, £10,000 was the ultimatum to which the promoters aspired. This amount it may fairly be stated has been accumulated, and the money funded. The annual proceeds from this investment, assisted by voluntary contributions from members and others, will enable the Council to distribute more freely substantial aid and assistance to many who, by misfortune, ill-health, or other causes, are to a certain extent dependent upon some such source as our Benevolent Fund; and the Council here cannot too strongly commend its support to the notice of those who are able and willing to assist in carrying on the good work. All interested may rest assured that the more liberally and generally sums are given, the more certainly will the range of relief to those applying be extended. Subscribers to this fund may be reminded that they have votes in connection with granting annuities, and also, that while at the formation of the fund the proceeds were to apply solely to those connected with the Society, claims can now be made by all who have ever been or ceased to be members of the Society, or by those who may have been registered as pharmaceutical chemists or chemists and druggists, as well as the widows and orphans of such persons.

The Council of the North British Branch of the Society cannot conclude this short Report without noticing the untiring exertions on the part of Mr. Sandford, who has now for so many years held the office of President of the Society; and they take this opportunity of recording a sense of the part so ably undertaken and successfully carried out by him, in connection with pharmaceutical legislation, during the time he has occupied the chair of the Society.

The time has arrived when it is no less a pleasure than a duty to recognize the long and arduous services gratuitously rendered to the Society, especially to the North British Branch, by our Honorary Secretary; and in accordance with this feeling, at a meeting of a few members of Council, Mr. Baildon proposed that an opportunity should be afforded to those who agreed in this opinion, to subscribe towards a testimonial to be presented to Mr. John Mackay. That this proposal has been responded to in the most gratifying manner, the pieces of plate now on the table, and which will be presented to Mr. Mackay to-day at a public dinner in his honour, sufficiently testify.

It is proper to state that, as a mark of the high estimation in which our Secretary is held by our Southern brethren, many have voluntarily come forward to request that their names might be added to the Scottish list.

The following lists of office-bearers were then submitted to the meeting,—subject, of course, in the case of the Examiners, to the approval of the Council in London:—

President—Mr. Wm. Aitken, Pitt Street.

Vice-President—Mr. Buchanan, of Duncan, Flockhart, and Co.

Council—President and Vice-President, Messrs. Ainslie, D. R. Brown, H. C. Baildon, G. Blanshard, Gardiner, Gilmore, Kemp (of Portobello), Noble, Raimes, J. R. Young, President and Vice-President in London *ex officiis*, Kinninmont (Glasgow), Kerr (Dundee).

Examiners—Messrs. Aitken, Buchanan, Ainslie, Kemp, D. R. Brown, Young, President and Vice-President in London and Secretary in Edinburgh *ex officiis*.

Library and Museum Committee—President and Vice-President, Messrs. D. R. Brown, H. C. Baildon, and Mackay. Mr. D. R. Brown to be Convener.

Secretary—Mr. John Mackay.

The report and the office-bearers for next year were unanimously approved of by the meeting. Thereafter Mr. D. R. Brown proposed a vote of thanks to Mr. Ainslie, the retiring President, for his services during the past year, which was carried very cordially by all present.

DINNER AND TESTIMONIAL TO MR. JOHN MACKAY.

At the close of the annual meeting, those present joined several gentlemen who had assembled to entertain Mr. John Mackay to dinner, on the occasion of presenting him with several pieces of silver plate, in recognition of the valuable services rendered by him to the Pharmaceutical Society for the last twenty-eight years, during which he has held the office of honorary secretary for the North British Branch of the Society. About fifty sat down to dinner, including Professor Archer, Dr. Stevenson Macadam, Dr. Robertson, Glasgow; Mr. Mathews, London; Mr. Stanford, Glasgow; Mr. Robertson, Mr. Gardner, Mr. D. R. Brown, Mr. Young, Mr. Beith, Mr. Tait, etc. Mr. H. C. Baildon occupied the chair, and Mr. Ainslie acted as croupier. During the evening Mr. Mackay was presented, as a token of esteem and respect from those connected with the profession of pharmacy in Edinburgh, Glasgow, London, etc., with a very valuable and handsome testimonial. The testimonial was placed upon the table, and consisted of a splendid silver dinner service, and other articles. One of these was a massive solid silver salver, more than twenty-two inches in diameter, with the arms of the Pharmaceutical Society engraved in the centre, and representations of the principal plants in the Pharmacopœia. The silver *epergne* was three feet high, with four branches, and stood on a silver plateau, the rim of which is embossed with vine-leaves and grapes. The two side-pieces and claret-jug are also of silver. The other articles were three electro-plate golden vases, one of them furnished with a clock. The cost of the whole was upwards of £150.

The usual loyal and patriotic toasts having been given from the chair, and duly honoured,—

The CHAIRMAN then rose and said:—In proposing the health of our friend and guest, Mr. John Mackay, my only regret is that it has not fallen into the hands of one more able than myself to do it justice. Little, however, requires to be said beyond a mere enumeration of the important services gratuitously rendered during the long period of twenty-eight years to the Pharmaceutical Society of Great Britain, and more especially to the North British Branch, to show the claim our friend has upon our gratitude and esteem. Whilst I doubt not that the pieces of plate now before us will convince Mr. Mackay that his arduous services have not failed to be appreciated by us, I may mention that up to the year 1852 no record was kept of the work done during the eleven previous years, although many meetings were held. In 1852 we obtained our first Pharmacy Act, the correspondence connected with which must have involved a large sacrifice of time and labour. Subsequently to this Act, and up to the present time, no less than forty-nine meetings for examination were held, at which 376 candidates were examined, all of which meetings were arranged and attended by our honorary secretary. Since 1852, sixty-eight scientific meetings have been organised, the greater number of which would certainly not have been given at all but through the strenuous exertions and personal influence of our friend. In addition to these, fifty-seven meetings of council and seventeen annual meetings were held, at all of which Mr. Mackay acted as our honorary secretary. These, taken in the aggregate, represent an amount of time and labour voluntarily given which I hesitate not to say no other member in Scotland was prepared to give. But our friend did all this unobtrusively and unostentatiously, with an object kept steadily in view, viz. the advancement of the science of pharmacy in this country, through the instrumentality of the Pharmaceutical Society of Great Britain, and in this he has been successful. The original impulse which has led him to go through this amount of labour springs, I doubt not, from his personal friendship with the founder of our Society, the late Jacob Bell, whose memory must always be held by us all in grateful remembrance. In 1861, Mr. Mackay was elected a member of the London Council, and has attended no fewer than thirty-four times at the meetings of the Board in Bloomsbury Square. And now another important service comes to be named. When he first became a member of the London Council, the Journal of the Society was published at a loss of no less than £608 a year. Mr. Mackay felt convinced that this heavy loss might be avoided, but his views on the subject were considered impracticable and chimerical. However, on his return to Edinburgh, he obtained estimates for the printing of the Journal, which confirmed him in his opinion, and at the next meeting of Council which he attended in London he carried his point, and this reform has produced the most gratifying results. The first year he effected a saving of £434, and now, in place of a loss, a clear profit accrues to the Society from the Journal of between £300 and £400 a year. I would claim the indulgence of the company whilst I read a few extracts from a mass of letters received by Mr. Ainslie and myself from our Southern brethren, which show that our friend has won the esteem of those gentlemen, a number of whom have voluntarily applied to be permitted to add their names to our Scottish list, and which it would have been ungracious to refuse, although it was originally intended to confine our testimonial to members north of the Tweed. (Mr. Baildon then read letters from the President of the Pharmaceutical Society, Mr. Sandford; from Professor Bentley, Professor Attfield, Mr. Hyde Hills, of the firm of J. Bell and Co.; Mr. Bremridge, and Mr. Brady.) These extracts, he continued, must be most gratifying both to Mr. Mackay and ourselves. After this brief statement, there only remains the pleasing duty of presenting the pieces of plate, in the name of the subscribers, to Mr. Mackay. The inscription upon the salver expresses our feeling towards him. It is as follows:—"Presented to John Mackay, Esq., Ph. Ch., F.C.S., with other pieces of plate, value £150, on the 27th May, 1869, by his professional brethren, in token of their esteem; and in recognition of his arduous services, gratuitously rendered to the Pharmaceutical Society of Great Britain, as honorary secretary for Scotland, during the long period of twenty-eight years." I now ask you to dedicate a bumper to his health, with a sincere wish that he may be spared to give the Pharmaceutical Society of Great Britain his valuable services.

Mr. MACKAY, who was received with applause, said:—There are occasions when, it has been said, the heart is too full for utterance, and, as I now rise to reply, I feel most truthfully that no words I can express will convey to you who are now present a sense of my feelings at this time. To be able simply to thank you and resume my seat would be, in one point of view, a relief, because, were my silence fairly construed and understood, it would be the best reply to all those who have contributed towards the very handsome testimonial which has just been presented to me in such eloquent and kind terms by my friend Mr. Baildon. I cannot, however, help feeling that it might appear to some singularly strange if I did not make an effort to say a few words in connection with an event which must ever be looked upon by me as one of the most interesting, if not important, in my life's history. In receiving and gratefully acknowledging these beautiful and substantial tokens of your appreciation and regard, it would be mere affectation were I to deny that I have spent much of my time during the last twenty-eight years in the endeavour to improve and elevate pharmaceutical education. Pharmacy in Great Britain was, as many round the table well know, at a very low ebb when our Society commenced its operations, and continued in a comparatively feeble state for many years. Stimulated by the example and zeal of many noble-minded men, I felt eager and anxious to assist in raising the standard of education in pharmacy, so that the ordinary, and, in many cases, uneducated dispensing druggist might become the more dignified and polished pharmacist. Many years ago, I once heard from the lips of the ever-to-be-remembered and admired founder of our Society the feeling of shame with which, in the days of the passport system, he, on entering France, declared his occupation to be that of chemist and druggist, for he felt at a loss to understand why, though in the same position as the dispensing chemist on the Continent—many of whom shone as the brightest constellations in the pharmaceutical firmament—he yet should occupy a niche so far beneath him in all that appertained to scientific acquirement and recognition. What, however, has happened since these words were uttered? Well may we say—

"Whether doing, suffering, or forbearing,
We may do miracles by persevering."

Certain I am that many of those who were interested in the progress of pharmacy, and who watched our onward movement—slowly, it is confessed, but not the less surely—can truly at the present time join in expressing wonder and amazement at the results which have attended our efforts. When I look upon the elegant testimonials which your kindness and that of others has bestowed upon me, I do so with deep and very peculiar feelings. I think of the past, linked with many endearing and, in some respects, sad associations. I remember affectionate and kind friends who have long since ceased from their labours; I think of many a hard-fought battle, of many an anxious hour, of difficulties to surmount, prejudices to overcome, and the unflinching desire that name and position should be obtained; I think of the resting-place we reached by our first legislative enactment of 1852, after the passing of which we only paused to gain fresh strength, and renew the fight, if possible, more warmly and earnestly than before. Another glance, and I am told of a battle fought and a victory won; I am told that, by compulsory powers, we are now on the high-road to fame, for who can doubt that we may yet find among the pharmaceutists of this country such men as Roubiquet, Pelletier, and Caventou? But your testimonial goes further, for not only does it remind of the past and tell of the present, but by another glance we are carried on to the future. It is not too much to say that in days yet to come we shall have springing up among us a college of pharmacy—an institution which, if once formed, will not be long in rendering its name famous, not only in this sea-girt isle, but throughout the whole habitable globe, wherever chemistry and pharmacy are recognized in their proper sphere. That such a period will arrive, I have neither doubt nor fear. It is true I may not be here to see, but come when it may—be it sooner or later, and be its centre in London or elsewhere—I fondly trust that, as we have so long conducted with so much success a branch of our Society here, so, in like manner, the smaller centre of our new college may find a resting-place in this our native city, which has for so many years shed a lustre on all that belongs to science, literature, and art. Gentlemen, let me again thank you with all the sincerity which those few words and warm unspoken feelings can convey, and, in the words of a well-known author, say, "Good go with you all."

PROVINCIAL TRANSACTIONS.

LIVERPOOL CHEMISTS' ASSOCIATION.

Fourteenth General Meeting, held at the Royal Institution, May 13th, 1869; the President, Mr. J. F. ROBINSON, in the chair.

The SECRETARY announced donations to the Library of the 'Pharmaceutical Journal' for May, 'Proceedings of the Liverpool Architectural Society.'

Mr. A. N. TATE presented to the Museum a series of specimens illustrating M. Mond's process for the recovery of sulphur from soda waste.

Thanks were voted to the donors.

Mr. HILDITCH exhibited some nuts containing a large percentage of oil, which had been recently imported, and asked for information respecting them.

Mr. SHAW said, that some years since he had examined a large number of nuts from various species of palm, and he believed that one specimen was the same as that shown.

Mr. TATE said that a phosphate mineral had been imported into Liverpool lately, and two analyses had been made, in which it was erroneously stated to contain phosphate of lime. It was really a phosphate of alumina and iron. He also exhibited a cheap apparatus for testing the igniting-point of petroleum oils, made by Mr. Redmayne, London Road. It was quite good enough for private use, but did not exactly fulfil the conditions of the recent Act.

The PRESIDENT stated that he had tested all the importations from America for the last two or three months, and had found that the igniting-point ranged from 105° to 115°.

Mr. TATE had bought twenty-two samples from retail dealers, of which eight had an igniting-point below 100°.

The PRESIDENT then called upon Mr. S. G. Hilditch to read a paper on "Some of the Preparations of Ph. B. 1867."

Acidum Sulphurosum was first noticed, and as an improvement it was suggested that two bottles be attached to the wash bottle, as in this way a pressure is put on the first bottle which has been proved to facilitate the absorption of the gas. He also noticed that the test given for ascertaining when the water was saturated, viz. when the bubbles passed through the solution undiminished in size, was a fallacious one, as after passing the gas through the water for about two hours he did not see any diminution in size, and on taking the sp. gr. it was only 1·008. Notice was then taken of the process patented by Dr. Dewar, of Kirkcaldy, for the preservation of provisions, more especially fish and butcher's meat, by means of this acid. The outline of the process is as follows:—The substance to be preserved is subjected to the action of the acid by immersion for a longer or a shorter time, according to its size, it is then, with as little delay as possible, subjected to a high temperature (not to exceed 140° F.), so as to preserve the albumen in the meat in a desiccated and not in a coagulated state, it is then redissolved by ample moisture with water. A specimen of fish and meat preserved by this process was shown, a quantity of which, along with several others, was sent by Dr. Dewar to Abyssinia with the late expedition, and they all kept perfectly fresh, being eaten by the troops on their return from Magdala. *Linimentum Pot. Iodidi c. Sapone* was then noticed; he stated that it was a troublesome preparation to keep, as it separated in cold weather, but on gently warming and shaking up, it went all right. *Syrupus Ferri Iodidi* was then noticed, and a reduction in the quantity of sugar ordered suggested, namely, from 28 oz. (the P. B. quantity) to 26 oz., substituting 2 oz. of water, as this was the strongest syrup that would keep. He exhibited specimens prepared with 28 oz. and 27 oz., both of which had crystallized. The specimens had been prepared for fifteen months, during which time they had been exposed to the ordinary light of a room, he was therefore in favour of the plan in the retail trade of putting up the syrup in bottles, such as they were in the custom of selling, as he thought this proved that it kept perfectly colourless when kept in bottles quite full. *Syrupus Ferri Phos.* was next noticed, and as an improvement, it was suggested that the 4½ oz. of diluted phosphoric acid ordered in the Pharmacopœia be evaporated to 1½ oz., and the phosphate of iron previously well pressed dissolved in this, then filtered into 12 oz. by weight of the simple syrup of the P. B., finally washing the filter with 6 drms. of water which made up the measurement to 12 fluid ounces. Or instead of evaporating the diluted acid, in making the phosphoric acid according to the P. B., instead of diluting it to 20 fluid ounces, to dilute it to 5 oz. 1 drm., or until the sp. gr. is 1·300; 1½ oz. of this is equal to 5½ oz. of the P. B. acid. He thought this process better than the P. B., as the syrup was much more quickly made, and the iron solution was not exposed as in dissolving the sugar in the diluted acid, which was a very tedious process without the aid of heat. Several other preparations were noticed, also the Sulpho-carbolates, and a specimen of the Sulpho-carbolate of Soda, prepared according to the directions in the Pharmaceutical Journal, was exhibited.

The SECRETARY said that it would probably be an advantage to use Bunsen's filter in preparing phosphate of iron, as it could thus be filtered and washed in a very short time, and oxidation would be avoided.

Mr. ABRAHAM, jun., said that by passing the current of sulphurous acid very slowly he had obtained a solution of full strength.

Mr. TATE proposed a vote of thanks to Mr. Hilditch, which was unanimously carried, and the meeting closed.

Fifteenth and concluding General Meeting, held May 27th, 1869; the PRESIDENT in the chair.

Mr. ARNOLD MILSON, Albert Road, Southport, was unanimously elected an Associate.

Mr. TATE suggested that at the half-session members should be received at half the ordinary subscription. This was the practice in some of the societies in the town, and he believed that many would thus be induced to join the Association, who had neglected to do so at the beginning of the session.

The suggestion was favourably received; Mr. TATE promised to move an alteration of the laws to this effect at the Annual Meeting. He also exhibited a sample of lubricating oil made from mineral oil, and introduced Mr. DUNCAN, who described the merits of the oil, and its mode of preparation.

The PRESIDENT then read his Valedictory Address.

He observed that at the commencement of the session, he had referred to the present and future state of chemists and druggists as a body, in relation to their altered position with regard to the public and the Legislature, and also to the arrangements made for the opening of classes for the benefit of their apprentices and assistants, in enabling them to qualify themselves for their profession. These classes, under the management of their able professors, left nothing to be desired, but the energy of those for whom they were formed. He did not believe in "lucky stars" or fortunate men, but as a rule, the strong man won the battle, and the weak failed; opportunity came to most men, but only those who prepared for such an opening could take advantage of the tide. The apprentice who had taken advantage of his opportunities, on commencing business would be enabled to conduct analyses, as, for example, such as may be required under the Act for the Prevention of the Adulteration of Food; he would thus gain the confidence of the medical man of his neighbourhood, and become his useful coadjutor. The speaker called upon his young friends to remember that youth was the time for study, and that nothing could compensate for its misuse.

To the masters he appealed, reminding them of their responsibility, under the altered condition of affairs, and trusted that they would do all in their power to promote the studies of those under their charge. The President observed, that one subject in particular called for some remark from him, and that was the necessity or duty of every chemist and druggist to examine every drug and chemical for himself; this he considered one of his most important duties, and one rendered still more necessary by the new Act for the Prevention of Adulteration of Food, etc.

Reference was also made to that portion of the Pharmacy Act relating to the labelling as "Poison" such articles as paregoric elixir and syrup of poppies, and it was suggested that, for the sake of uniformity, it might be well to adopt a label such as "Poison by Act of Parliament." The President concluded his address by thanking the members for their kind support during the session.

Mr. **Abraham** said that the President had alluded to the course of lectures delivered by Mr. E. Davies, F.C.S. He had attended most of them, and he considered that some special acknowledgment was due to the lecturer for his efficient services. He proposed a vote of thanks to Mr. Davies.

Mr. **Shaw** seconded the motion, which was carried unanimously.

Mr. **Sharp** proposed a vote of thanks to the President for his excellent address, and also for the courtesy with which he had conducted the meetings of the Association during the session.

Mr. **Redford** seconded the motion. He mentioned the conversazione as an instance of the interest which the President had taken in the Society, and said that his conduct in the chair had been marked throughout by urbanity and ability.

The motion was carried by acclamation.

The **President** briefly returned thanks, and the session concluded.

NOTTINGHAM AND NOTTINGHAMSHIRE CHEMISTS' ASSOCIATION.

At the suggestion of the Nottingham Chemists' Association, the following courses have been arranged with Owens College, Manchester, in connection with the University of London, specially to prepare students for the Examinations required, under the Pharmacy Act, to be passed before persons can commence the business of chemist and druggist:—

Department of the Evening Classes. Pharmaceutical courses, 1869–70.

1. The session in all the evening classes will commence on Wednesday, the 6th October, 1869, with an introductory address, open to the public, to be given in the Library of the College, at 7.30 P.M.

2. *New Students* will be admitted by the Principal on Thursday the 7th and Friday the 8th October, from 6.30 to 8.30 P.M. *Former Students* can re-enter with the Registrar, on Monday and Tuesday, the 11th and 12th October, from 6.30 to 8.30 P.M. Students entering after the above dates must apply to the Principal if new students, or to the Registrar if former students, from 12.30 to 2 P.M. on any day of the week except Saturday. Former students may also re-enter with the Sub-Librarian on any subsequent evening, except Saturday, during the month of October.

3. New students are required to produce a letter of recommendation from their employers, or such other testimonial as shall be approved by the Principal.

4. Intermediate examinations will be held in most of the classes at the commence-

ment of the Christmas term, and sessional examinations at the end of the courses; on the results of the latter, prizes and certificates of honour will be awarded.

5. Each of the pharmaceutical courses will comprise twenty-seven lectures. The fees (to be paid on entrance) are as follows:—

Admission fee for each new student	0	2	6
Each lecture course	0	15	0
Any three of the lecture courses	2	0	0
The four lecture courses	2	10	0
The laboratory course (the use of all the necessary apparatus and chemicals included)	4	4	0

The courses of instruction for this session are—

1. *Latin.*—Mr. Augustus S. Wilkins, M.A.; Mr. Arthur G. Symonds, B.A. Monday, from 7.30 to 8.30 P.M. Latin Grammar; Cæsar, 'De Bello Gallico,' book i. Two classes will be held, should the number and varying attainments of the students require it.

2. *Chemistry.*—Prof. H. E. Roscoe, B.A., Ph.D., F.R.S., F.C.S.; Mr. C. Schorlemmer, F.C.S. Monday, from 8.35 to 9.35 P.M. The first portion of the course consisting of about twenty lectures, will be given by Prof. Roscoe, and will treat of the elementary principles of chemical science, and the nature and properties of the non-metallic elements and their compounds. The second portion of the course will be given by Mr. Schorlemmer, and the subjects treated of will be the characters and tests of the most important metallic salts and organic substances used in pharmacy, and the methods of ascertaining their purity and strength.

Laboratory Course of Practical Chemistry.—Monday, from 6 to 8.30 P.M. This class is intended for those students who have already passed through the lectures on elementary chemistry, or who have otherwise made themselves acquainted with the principles of the science. The course of instruction will embrace the construction of tube apparatus; the preparation of some of the most important gases, acids, and bases, and the study of their properties and characteristic reactions; the characters and tests of the most important chemical substances used in pharmacy, and the methods of ascertaining their strength; the tests for poisons, organic and inorganic; the mode of separation of the groups of elementary bodies, forming the groundwork of qualitative and quantitative analysis. Each student will make the experiments separately.

3. *Botany.*—Prof. W. C. Williamson, F.R.S. Wednesday, from 7.30 to 8.30 P.M. The anatomy and physiology of plants; elementary tissues; compound organs of nutrition and reproduction; principles of classification; systematic botany.

4. *Materia Medica.*—Mr. Alexander Somers, M.R.C.S. Wednesday, from 8.35 to 9.35 P.M. Inorganic substances: non-metallic elementary substances, mineral waters, acids, and the products of fermentation; salts of the metals. Organic substances: vegetable; animal.

At the request of the Council of the Manchester Chemists and Druggists' Association, Prof. Williamson will this year give a short summer course of twelve lectures on botany to their Members and Associates. The course will be elementary and preparatory to the more extended winter course. The lectures will be given at the College on Thursday afternoons, from 4 to 5 P.M., commencing on the 10th June, 1869. Tickets may be obtained from Mr. F. Baden Benger, Hon. Secretary of the Association, 1, Market Place, Manchester.

A detailed Syllabus of the several Courses of Lectures for the Session 1869–70, and of the scholarships and money prizes open to evening students, together with the Principal's Report, the Examination Questions, and the Prize List for the preceding Session, may be procured, price 6*d.* (by post 7*d.*), from the publishers, Messrs. Thomas Sowler and Sons, Red Lion Street, St. Ann's Square; from J. E. Cornish, 33, Piccadilly; or at the Office of the College, Quay Street, Manchester.

J. G. Greenwood, *Principal.*
J. Holme Nicholson, *Registrar.*

June, 1869.

SUNDERLAND CHEMISTS' ASSOCIATION.

A meeting of the members of the above Association was held in the Athenæum, on Monday evening, June 7th; William Thompson, Esq., the President, in the chair. The minutes of the last meeting having been read and confirmed, the meeting proceeded to consider the code of rules which had been drawn up by the Council of the Society, Messrs. Bird, Dalby, Dobinson, Sharp, and J. Harrison. These rules were, after much discussion and a few slight alterations, agreed to. The President then signified his intention of presenting a number of books, to form the nucleus of a library intended to be established in connection with the Association, and it was also announced that Messrs. Evans, Sons, and Co., of Liverpool, intended to present one of their Materia Medica cabinets. The announcement of these donations was received with applause, and thanks were voted to the donors. After a letter had been read from the Pharmaceutical Society, stating that Mr. J. J. Nicholson, the Honorary Secretary of the Association, had been appointed local secretary, the meeting terminated.

ORIGINAL AND EXTRACTED ARTICLES.

THE FRENCH AND ENGLISH SYSTEMS OF MONEY-WEIGHTS AND MEASURES.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—The recent discussion upon this subject, and its national importance, induce me to address to you a few observations on the question, "What is the *gramme*, and how are we to deal in 'metric' quantities?"

We are told that the adoption of the "metric" system is only a "question of time;" and, instead of dealing in dozens and counting by tens, we are now invited to adopt a foreign system, and to introduce money-weights and measures all divided on a decimal scale.

As this question is one that involves first principles, we are necessarily compelled to refer to our national standards, and to treat the respective systems of money, as well as weights and measures, in as simple and primitive a manner as possible. The subject can only be dealt with in connection with the coins of the country; and as the metric system is described as a purely decimal system, in comparing our weights and measures with those in use, called "metric," we must consider first in what manner decimals may be used with advantage, and to what extent the English, as well as the French, system admit of their application.

The decimal system works very well upon paper. In our calculations and accounts, although the florin and the decimal measures of the penny and the pound are only of real use in the application of decimals to our money of account and standard weights and measures, we have in them a comprehensive and practical means of comparison with "metric" measures. Without these or some other decimal measures, it would be impossible to give even approximate equivalents to the weights and measures of the metric system.

The use of decimals certainly appears to be little understood in this country. It may be that hitherto decimal weights and measures were only forced upon those who hold commercial relations with France; but the application of decimals to our money has not only long occupied the attention of scientific men, but a permissive bill, for the use of "metric" weights and measures in this country, has actually passed through Parliament. Money, however, being the standard by which people always value "things," it is vain to attempt to introduce any changes without preserving and establishing a certain relation which it is quite necessary to maintain between the coins of the country and the weights and measures in use.

The "metre," as a *standard*, is "as unstable as water," for, according to the best authority, it is no measure of the quadrant of the earth's surface; if it were the 10-millionth of the quadrant in the meridian of Paris, it must vary in every other meridian; and as it is impossible to square such a measurement, it gives us, as an equivalent measure, a circular number of inches and decimal parts of an inch, a measure which can never be accurately defined. In the metric system we have the franc, which is called five grammes; in the English system we have the penny, the halfpenny, and the farthing, as standard measures of the pound and the ounce, as well as of the foot and the inch, and it is only necessary to legalize their use as weights and measures to give us the best means of comparing and dealing out metric quantities. In the penny and the pound we do, in fact, possess the most comprehensive and practical standards in the world.

The metric system makes the gramme, the French unit, the weight of a cube of water about the size of dice, and this gramme is the metric standard of which the kilogramme contains 1000 of such grammes. The English pound of 7000 grains gives us exactly 10 pounds of water in a gallon. The French pound or *livre usuelle*, now called 500 grammes, is said to be the weight of half a cubic decimetre of water, the cubic decimetre being a measure calculated to contain two and two-tenths of a pound avoirdupois-weight of water. Now, this measure brings English and metric weights into so simple a ratio one to the other, that the reduction of metric measures into English is for all practical or commercial purposes perfectly easy.

Let us therefore take things as they are, and make the most of the means we fortunately have at our disposal. Let us work out this simple problem before we talk of substituting a system which will not stand the test of experience or bear comparison with one that practical men cling to because it is sound, and is calculated to serve every useful purpose.

In numeration we have to deal with the natural, the unnatural, the duodecimal, and the English systems. The first is the scale of 3, dividing into 9 parts; the second is the metric or French scale of 10's; the duodecimal is the scale of dozens; and the English the common scale which is called binary, generally dividing into sixteenths. This scale of all the others is found most convenient. In prescriptions, for example, the relation between separate ingredients and the total quantity is made octavial in 30 cases to 10 duodecimal to 1 decimal. In pharmacy there certainly exists an undoubted preference for this octavial scale. It is not surprising, because division or multiplication by 5 or 10 is never necessary, and anything which does not work in harmony with nature sooner or later dies out. In dealing on the metric scale we are also always troubled with 5; the metric system begins and ends with 5; it is so far a limited system that will not work well when we have to deal in quantities divided or made up of 3 or its multiples; the metric system also involves the reduction of everything into cubes,—straight lines, squares, and cubes have no existence in nature, and the highest mechanical skill fails to produce them. It is consequently an ideal system, and none of its measures can be obtained without mechanical aid.

The French system unfortunately ignores everything derived from 3; it rejects 7, 9, 11, 12, and 13; it does not know the proof by 9 and serviceable 11; it cannot count the dozen, and will not admit sixteenths or any submultiple but 10; it complicates all dealings in even 4, 6, 7, 8, 9, 11, and 12, and in all practice is reduced at last to the binary scale. The division of the quadrant into hundredths instead of ninetieths has long been abandoned, as navigation soon taught that one could only depend upon reckonings founded on the English triangular system. We cannot realize the fifth of anything; nothing will induce an Englishman to say that two and two make five, or that it is possible for any Frenchman to cut his cheese into five equal parts.

The franc is supposed to be five grammes-weight, but how are we to realize the fifth? how can we get at a true gramme-weight? The half-quarter eighth or sixteenth may be got at, for we can halve any quantity, and, so, go on *ad infinitum*. We may calculate the quantity, but, after all, that is but an estimate, and we come at last, as the French do, to calling the gramme a weight equal to 4 *gros*.

On the other hand, the English system, which comprehends all that is practical and useful in the decimal and duodecimal as well as natural scale, only requires ordinary intelligence and the "rule of thumb" to work out all our moneys, weights, and measures, and a little knowledge of arithmetic will enable any one to convert our money, weights, and measures into very close approximates to the metric.

The English system thus enters into the metric; in fact, we have all the advantages of the use of decimals as applied to money, weights, and measures, and in calculations, as well as the booking of accounts, we are not only able to write off our money in decimals of the pound; but the binary scale of subdivisions enables us to make the best use of perfect decimals, and to substitute by reciprocals short divisions for often very long multiplications.

In the penny and the pound we possess useful, tangible, and good standard weights; and in making use of our pence, halfpence, and farthings (coined since 1860), we require no other weights or measures of any kind to compare or measure off metric quantities.

As apothecaries' weights are in question, for the sake of beginning at the beginning, we will take the grain as the English atom, and the *gros* as the French, and reduce the gramme to measures in these units, with which we are most familiar. For this purpose we shall take the penny and the pound, the ounce and the inch, the half-pint and the gallon, as standards for comparison with the franc and the half-gramme, the half-kilo or *livre usuelle*, and the half-litre, which is to the Frenchman what the half-pint is to the Englishman (not quite large enough).

Every Englishman knows that a pint of wheat is called a pound, that the half-pint is exactly ten ounces of water. We also know that the gallon is a measure of any form, containing ten pounds of water. Every Englishman ought to know that our penny is the third of an ounce; the halfpenny the fifth of an ounce, and that we have twelve pence to a quarter of a pound, while the penny's width is the tenth of the foot. In the halfpenny we have the inch and the fifth of an ounce, so that there are eight halfpence in a tenth of a pound, and as the farthing or "fourthing" has been made to weigh one-half of the halfpenny; the farthing is the sixteenth, and may be considered the English decimal unit.

The legal ounce is one of 437½ grains, and we have now sixteen drams to the ounce, as well as sixteen ounces to the pound of 7000 grains. Medicines are compounded in measures of grains up to 60 grains, apothecaries' weights being generally made up of sixteenths of the grain, and 1, 2, etc., up to sixty grain-weights (sixteen avoirdupois drams to the ounce). Apothecaries thus dispense on the old scale (eight drachms of three scruples of eighteen grains), while they use avoirdupois-weights and grain-weights only.

The practice in the metric system is to treat the metric atom or the gramme as a weight equal to 4 *gros;* the so-called metric ounce of 31¼ grammes is made one of 30, so that 30 in the metric system is taken for 31¼. We are cheated, too, because they call for convenience our ¼ ounce 7½ grammes, as the metric system does not produce a corresponding weight; thus in practice they are compelled to accept a binary scale of 30 grammes as an ounce.

Since the gramme has been ascertained to weigh more than 15 grains, we may be justified in saying that a quarter-gramme is a measure of 4 grains; our penny-piece is within eight grains of the 10 gramme-weight, so that our penny gives us some idea of what weight the gramme is; and if, for the sake of working up from our atom on what may be called an international scale, we bear these facts in mind, we shall have to begin with the quarter-gros, and its equivalent in grains, and have a table up to 16 grains to a gramme, just as we have 16 drachms to the ounce, and 16 ounces to the pound, our international standard being one half-gramme=7·716 grains for fine weights, and seventeen ounces and three-fifths or 1·1 lb.=500 grammes (in defect only one grain in the ounce) for weights and measures from the ounce up to the gallon, and the old English tun.

In our coppers we have fifths and tenths both of the pound and the ounce, so that a farthing thrown into the scale with our ounce is the equivalent (within one grain) to the so-called metric-ounce or sixteenth of 500 grammes, and with eight halfpence on the pound we get the half-kilo quite near enough for practical purposes.

Since the standard metre is very nearly 1 yard, 3 inches, and ⅜ (within an inch of $1\frac{1}{10}$ yard), a ready measure of the length of the metre is obtained by adding twopence and a halfpenny to our yard measure. A decimetre or $\frac{1}{10}$ of a metre is very nearly 4 inches, so that we may say the measure of the litre is the quantity of water contained in a *tin* cube of 4 inches. Thus we have a ready-reckoner in counting metric to English measures of length as well as weight and capacity in the ratio of 10 to 11, and the old English tun of 220 gallons is the nearest equivalent to the French *tonne* or cubic metre. We may also bear in mind that in measuring up, 10 metres are nearly equal to 11 yards, 10 square metres to 12 square yards, and 10 cubic metres to 13 cubic yards.

The pound sterling is our unit of account, and the value of the sovereign is well known all over the world. The pound of sterling silver is coined into sixty-six shillings; and we have in the crown and half-crown the ounce and half-ounce; but our copper coins afford us the best weights and measures we can have for international purposes; they afford us very exact weights and decimal measures of the pound and avoirdupois ounce, as well as the foot and the inch, and, in using them in connection with our ordinary weights, we have all that is necessary for dealing in metric quantities.

The practice of pharmacy gives us the following as the most comprehensive scale:—

1 gramme = 15 minims.
2 " 80 "
4 " 60 "
5 " 77 grains.
7 " ¼ ounce.
14 " ½ "
28 " 1 "

For measures of the gramme and the grain we have—

5 grammes = 77 grains = 0·011 pound.
50 " 771 " 0·110 "
500 " 7716 " 1·100 "

For measures of the pound and the kilo, the gallon and the litre:—

5 kilos = 5 litres = 11 pounds = 1·1 gallon.
50 " 50 " 110 " 11·0 "
500 " 500 " 1100 " 110·0 "

And at six bottles to the gallon we have, in 100 litres, exactly 11 dozen.

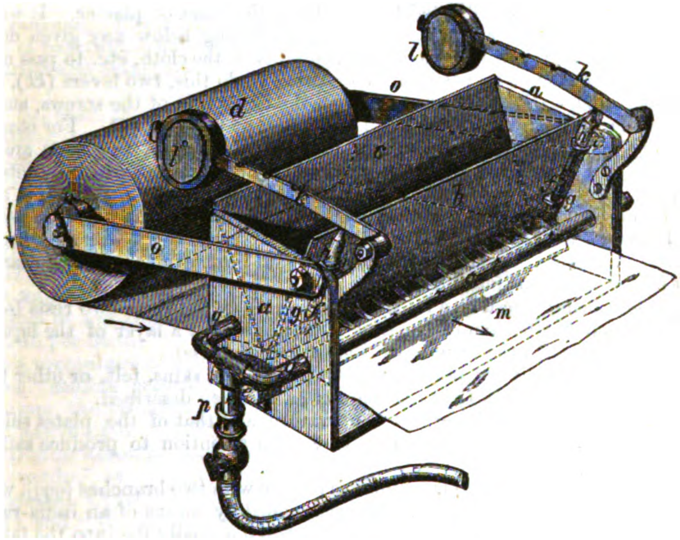
Your obedient servant,
"DECIMAL-POINT."

A NEW PLASTER-SPREADING APPARATUS.

DEVISED BY WILLIAM MARTINDALE,

DISPENSER, AND TEACHER OF PHARMACY TO THE UNIVERSITY COLLEGE HOSPITAL.

This apparatus consists of a trough with a false bottom, in which a series of jets from a Bunsen's burner are applied to heat the side plates, the cloth being passed under these to be covered with a layer of plaster.



aa. The "cheeks" or ends of the machine.
b and c. The side-plates of the trough.
d. The roll of cloth.
e. The support for the cloth and plates.
ff. The screws to regulate the front plate *b*.
gg. The nuts in which they work.
hh. The heads of the screws.
ii. Two threadless nuts.
kk. The levers.
ll. Two moveable weights.
m. The spread plaster.
n. A roller on which the cloth is placed.
oo. Two rests for this roller.
p. The heating apparatus.
qqq. Its two branches.

The framework of the machine, made of cast-iron, has two "cheeks" (*aa*) placed at right angles with the bottom. These cheeks form the ends of the trough. The interior of each has two grooves in which two wrought-iron plates (*b* and *c*) fit so as to allow of their being raised or lowered as required. The grooves of the back plate (*c*) are at an angle of 60° with the bottom, and in them the plate works of its own free gravity. The grooves of the front plate (*b*) are at an angle of 75°. The "play" of this plate is regulated as will be described. The edges of the plates at the bottom where they press upon the cloth are slightly bevelled. These two plates and the cheeks above mentioned form the sides and ends of the trough; the cloth (*d*) forms the bottom, as it passes through over an iron support (*e*). This support is in the shape of the section of a wedge, the acute end of which is terminated by an arc. The arc forms its upper surface over which the cloth is drawn; the support, as is shown in the figure, projects a little through each cheek, and is fitted accurately into its position by two keys placed under it, and resting on the cheeks, the borings through which correspond with its wedge-shape. It is covered with fustian, which gives it a yielding surface for the iron plates to press the cloth against whilst being drawn through. By these arrangements leakage from the trough is entirely prevented.

The play of the front plate (*b*), as has been stated, requires regulating for different plasters, and when they are required to be spread of different degrees of thickness; this is done by means of two screws (*ff*) working in nuts (*gg*) which are riveted to the plate; the heads (*hh*) of these screws work against threadless nuts (*ll*) attached to the cheeks (*aa*). By screwing or unscrewing these, the plate can be adjusted to spread any thickness of plaster. It will be observed that the screws can prevent the plate falling below any given depth, yet allow it to be raised to permit any inequality in the cloth, etc. to pass under it and again to resume its position. To assist it to do this, two levers (*kk*), with moveable weights (*ll*) attached, press upon the heads (*hh*) of the screws, and indirectly the pressure is exerted upon the plate, or the nuts (*ii*). For common strapping and plasters, which require to be thinly spread, the bolts are unscrewed so far that the heads of the screws do *not* rest on the threadless nuts (*ii*), the plate therefore presses without any obstruction on the cloth, and, in addition to its own weight, pressure is exerted upon it indirectly by the weights and levers, as above stated. This plate is nearer the perpendicular than the back plate, because the spread-plaster (*m*) should be drawn through as nearly at right angles with it as possible.

The cloth being placed on a roller (*n*), which is suspended on two rests (*oo*), is passed through the bottom of the trough, taking with it a layer of the liquefied plaster (contained in the trough) as it is drawn off at (*m*).

By regulating the front plate with the screws (*ff*), skins, felt, or other thick material can be spread in the same manner as has been described.

The condition of the plaster, its temperature, and that of the plates suitable for spreading, are matters which require careful attention to produce satisfactory results.

The heating apparatus (*p*) is a Bunsen's burner with two branches (*qqq*), which perforate the cheeks at each end. Gas is supplied by means of an india-rubber tube. A stopcock regulates its admission through a small tube into the interior of the larger tube. Air is admitted to mix with the gas by holes near the bottom of this, the quantity being regulated by the usual nozzle. The mixture of gas and air is burnt in a row of jets in each branch directed against the plates (*b* and *c*); thus these and the liquefied plaster in the trough are kept at a nearly uniform temperature.

The burner can be detached and fitted into the machine inverted, so that, when not in use, the whole occupies but very little space.

Mr. J. H. Spencer, Southwark Bridge Road, constructed the apparatus under the direction and supervision of the inventor.

NOTE ON THE SO-CALLED SOLUBLE PEROXIDE OF IRON.

BY WALTER G. SMITH, M.B.,
FELLOW OF THE COLL. OF PHYS., ASSIST. PHYS. TO THE ADELAIDE HOSPITAL.

This compound occurs in small, cubical, reddish-brown crystals, with a purely sweet taste, followed by a slight chalybeate flavour. Being desirous to ascertain if the iron were really combined with the sugar in a soluble form, as asserted, I procured some of this compound from Messrs. Dinneford and Co., M. Chanteaud's agents in London, and made the following simple experiments:—

When a few grains are treated with cold water, the sugar, of course, is readily soluble, and it is manifest at once that the peroxide of iron is simply adherent to the surface of the crystals of sugar; for the peroxide almost immediately is detached from the sugar, and diffused mechanically through the solution, leaving the residue of the crystals of sugar *perfectly colourless.* The solution was filtered, and the filtrate acidified and tested with ferrocyanide of potassium, sulphocyanide of potassium, and sulphide of ammonium. No precipitation or coloration ensued, except the slightest possible tinge of blue with the ferrocyanide of potassium. The filtrate, on standing for some time, deposited an additional trace of peroxide, which was filtered off, and the resulting filtrate was perfectly colourless and transparent, and gave negative evidence with the tests for a ferric salt.

So far, then, from its being "perfectly soluble," or "only a trace of the iron remaining insoluble"* (see Pharm. Journ. May, 1869, p. 647), not a particle of the oxide of iron is really in solution. The peroxide would certainly be soluble in the gastric fluid, but it is erroneous to state that it is at all soluble in water. To determine the amount of peroxide present, which was evidently very small, the following experiments were made:—

3·601 grammes ignited in a platinum crucible left 0·017 gramme of Fe_2O_3 $=0·47$ per cent. The smallness of the result surprised me, and as I thought that there might have been some mistake, I ignited, on another occasion, 3·6212 grammes in a silver crucible, and obtained a residue of $Fe_2O_3 = 0·0176$ gramme, viz. 0·48 per cent.

This percentage of peroxide of iron is almost homœopathic, and to give a dose of this "soluble peroxide of iron" equivalent to 5 grs. of the ferri peroxidum hydratum, the minimum dose in the British Pharmacopœia, we should have to order nearly 2½ oz. (1041 grs.).

A Dublin house has also quite lately put forward this preparation, or "rusty sugar-candy," as it was aptly designated by a friend, under the specious title of Saccharated Crystallized Oxide of Iron (omitting, however, M. Chanteaud's name), and "its perfect *solubility*, and, as a consequence, its ready absorption into the circulation without any disturbance of the functions of digestion" are enumerated as some of its points of advantage over other preparations of iron.

Dublin, June 14, 1869.

NOTE ON LINIMENTUM POTASSII IODIDI CUM SAPONE.

The difficulty experienced in always producing a good result in making this preparation seems to depend on some slight difference which exists in Marseilles soap, even in different samples obtained from the same maker.

To obviate this, it has been suggested to replace one-third of the hard soap with the same quantity of the potash soap of the Pharmacopœia. This has been tried with perfect success, the liniment forming a jelly which does not separate, as is so often the case when made with Marseilles soap only, a slight difference in which is quite sufficient to prevent the formation of a good liniment.

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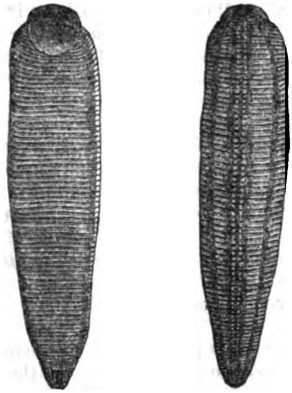
* We observe that Professor Chevallier, of the School of Pharmacy of Paris, Member of the Academy of Medicine, testifies to the solubility of this preparation in the following terms:—"Chanteaud's saccharated oxide of iron is soluble in distilled water, and its solution passes through a washed filter coloured and without residue.—Ed. P. J.

AUSTRALIAN LEECHES.

By the use of moist clay, and the supply of a little fresh water from time to time, leeches can without much difficulty be brought from the most distant parts of the globe; and the feasibility of thus conveying them to this country from Australia has recently been proved by the introduction of a large number of Australian leeches as a commercial speculation. We are sorry to find, however, that the speculation has proved an entire failure, which has principally arisen from two causes. In the first place, the use of the leech has very much fallen off of late years, in proof of which we may state that the amount paid for leeches at one of our large hospitals is not now more than about one-twentieth part of what it used to be; and further, the sale of Australian leeches is limited by the fact that they differ in appearance from those commonly used in this country.



The engraving represents the leeches recently imported, with their characteristic markings. An eminent naturalist, to whom they have been submitted, says the characters agree very well with those of a leech found in the rivers of Australia, and described by Schmarda under the name of *Hirudo quinque-striata*, from the fact of there being five stripes down the back. These stripes are of a dull green colour on a yellow ground. The belly is yellow. Schmarda also mentions another species or variety, found in the Murray river, Australia, which he names *Hirudo tristriata*. It differs only from the first in having three stripes instead of five. Both sorts are used as medicinal leeches.

NOTES AND ABSTRACTS IN CHEMISTRY AND PHARMACY.

BY C. H. WOOD, F.C.S.

Turpentine an Antidote in Phosphorus Poisoning.

In a recent number of this Journal an account was given of some observations by Dr. Audant on the influence of turpentine in counteracting the poisonous effects of phosphorus.

M. Personne has now published some experiments upon the same subject, which go still further to prove that turpentine is a real antidote to poisoning by phosphorus.

The experiments were made on fifteen dogs of moderate size and equal strength. The animals were divided into three series: the first five received phosphorus alone; the second five received essence of turpentine one or two hours after the administration of phosphorus; the third five received essence of turpentine immediately after the ingestion of the poison. The dose of phosphorus given was from 0·1 to 0·3 gramme, dissolved in oil of almonds and emulsioned with yolk of egg. The turpentine was administered in doses of 10 grammes, also emulsioned by yolk of egg.

The first five all died. The second five suffered from the same symptoms as the first series, several being very ill, but one only succumbed, the other four recovered perfectly. Of the third five, one died; the four others suffered but slight indisposition. The two deaths may be accounted for by the fact that the animals happened to be among those operated upon on the 22nd of January, when the cold was extremely severe; added to which they received the largest dose of phosphorus (0·8 gramme) without any increase in the quantity of antidote. The influence of the extreme cold added to the depressing effect of the phosphorus may have led to the fatal result.

M. Personne conceives that the turpentine acts by impeding or preventing the oxidation of the absorbed phosphorus at the expense of the oxygen of the blood, in the same way that it arrests the slow oxidation of phosphorus in the air.

Influence of Pressure on Chemical Phenomena.

M. L. Cailletet has published[*] some interesting experiments on the influence of pressure on chemical reactions. Thus he shows that the action of hydrochloric acid upon a sheet of zinc diminishes in exact proportions to the increase of atmospheric pressure upon the substances, and may even be made to cease entirely. By weighing the sheet of zinc before and after the action of the liquid acid, the loss of metal is shown to be—

When operating in open air	10·0
„ „ at a pressure of 60 atmospheres . .	4·7
„ „ „ 120 „ . .	0·1

and comparative experiments with nitric acid acting on a crystal of carbonate of lime, under a pressure of 150 atmospheres, and in the open air, the quantities of carbonate dissolved in an equal time are in the proportion of 1 to 11:09.

It is also shown that the most energetic acids exercise scarcely any action on iron, tin, aluminium, or sulphide of iron, when submitted to high pressure. The decomposition of water by the galvanic pile is similarly influenced by increased pressure. A disengagement of gas in a voltameter, which is abundant in the open air, ceases completely when the atmospheric pressure is sufficiently augmented. By enclosing in a sealed tube an amalgam of sodium and some water, the oxidation of the sodium may be almost completely arrested in consequence of the pressure developed by the accumulation of the hydrogen in the limited space. On opening the tube after several days, the disengagement of gas again commences. The same quantity of amalgam in contact with water at the ordinary atmospheric pressure loses all trace of its sodium in a very short time.

Chemical action thus largely reduced by pressure, can acquire new activity by an elevation of temperature. Thus the quantities of zinc dissolved by diluted sulphuric acid at zero, and in a tube heated to 50° C. are in the proportion of 1 to 2·8. These facts seem to completely assimilate the disengagement of gas by chemical action to the ebullition of liquids.

The foregoing experiments having demonstrated that the chemical action diminished in proportion to the increase of pressure, M. Cailletet sought to ascertain whether the same phenomena of decomposition would be augmented in intensity by the removal of the ordinary atmospheric pressure; that is to say, by operating in a vacuum. He found that the quantities of aluminium dissolved in hydrochloric acid in equal times in the free air and in a vacuum were in the proportion of 1 to 1·68; of zinc in sulphuric acid, 1 to 1·53; and of carbonate of lime in nitric acid, 1 to 2·51. He concludes, therefore, that pressure exercises an important influence on chemical phenomena, that the evolution of gas by chemical decomposition is subject to the same physical control as the ebullition of liquids, and that chemical changes may therefore be as much attributable to the mechanical conditions under which they occur, as to the operation of any particular force of affinity.

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[*] 'Journal de Pharmacie,' 1869.

Influence of Ozone on the explosibility of Picrate of Potash.

A curious suggestion has been made in reference to the lamentable explosion of picrate of potash which recently occurred at the warehouse of M. Fontaine, in the Place de la Sorbonne, at Paris, namely, that the result may have been in great part due to the presence of ozone in the air. M. Houzeau, whose researches in ozone are well known, has made some experiments on the action of this substance upon the picrates. He prepared a flask of ozone, into which he then introduced 5 decigrammes of picrate of potash; an explosion immediately ensued, shattering the vessel to fragments by its violence. He then operated with a mixture of air and ozone (in which the ozonometer marked 500 millimetres), and, on adding the picrate, the explosion again occurred with the same intensity. Proceeding by degrees, he arrived at the conclusion that picrate of potash is decomposed when the ozonometer marks 45 millimetres.

It is a remarkable circumstance in connection with this explanation, that on the day of the catastrophe at the Sorbonne, the ozonometer at Paris is stated to have marked 51 millimetres, the highest point yet observed. On the day after, the instrument only marked 23 millimetres.

A New Test for distinguishing between Morphia and Brucia.

Morphia and brucine possess in common the property of becoming red by contact with nitric acid. The reaction of the one alkaloid may, however, be distinguished from that of the other by the subsequent behaviour of the red product with reducing agents. In the case of morphia, the nitric solution treated with protochloride of tin is completely decolorized; when brucia is similarly treated, the colour passes to a violet. M. Stanilas Cotton points out that most other reducing agents, such as the sulphites, alkaline hyposulphites, etc., possess the same power. Hyposulphite of soda is even capable of producing the reaction in the cold. But M. Cotton is of opinion that of all substances the hydrosulphate of the sulphide of sodium presents the greatest advantages. When to a solution of brucine in nitric acid, heated to about 60° C., is added a concentrated solution of hydrosulphate of sulphide of sodium, the colour soon passes to a violet, and, on continuing the addition of the sodium-salt, a persistent green colour is developed, which is rendered brighter by filtering the mixture. Nothing similar is produced by morphia under the same treatment; this reaction serves well, therefore, to distinguish between the two alkaloids.

The green liquid possesses the following characters:—It is analogous in tint to the aldehyde green of commerce; it is unaltered by the alkalies; the dilute acids convert it to a rose-colour with the disengagement of sulphuretted hydrogen; after one or two days the green colour disappears with the formation of a greenish precipitate. When the operation has been well conducted, 2 milligrammes of brucine suffice to give a sensible colour to half a litre of water.

Detection of Santonin.

M. Rieker having occasion to detect santonin in some lozenges, operated as follows:—A couple of lozenges reduced to powder were percolated with chloroform, and the solution evaporated to dryness. The residue consisted of the pure santonin.

Poisonous Dyes (Coloured Socks).

M. Tardieu has made known several accidents caused by socks or stockings coloured with coralline or aniline red, and now gives several tests by which these dyes may be recognized on the fabrics. The colouring-matters employed for dyeing red are six in number: 1st, garancine; 2nd, cochineal; 3rd, murexide; 4th, carthamus; 5th, fuchsine, or aniline red; 6th, coralline. The three first are fixed on the fabrics by mordants, that is to say, metallic oxides; garancine by alumina, or alumina and tin; cochineal by tin; and murexide by oxide of mercury or lead. The other colouring-matters may be fixed without mordants; but aniline red prepared with arsenic is said to usually contain a certain quantity of arsenic. The following characters are those recommended by M. Tardieu for distinguishing these dyes:—

Garancine red is not altered by solutions containing 3 to 4 per cent. of hydrochloric acid or of ammonia. The liquids are not sensibly coloured. The colour is the most resisting of organic reds.

Cochineal red plunged into solution of ammonia changes to violet, and communicates a very bright violet tint to the liquid.

Murexide red bleaches rapidly in simple contact with a solution of citric acid.

Carthamus red is completely decolorized by a short ebullition in a ½ per cent. solution of soap.

Aniline red is decolorized very rapidly by contact with ammonia, but the colour is restored either by the addition of an acid or by the evaporation of the alkali. Marsh's apparatus reveals traces of arsenic.

Coralline red does not dissolve in cold water. It cedes a little of the colour to boiling water, but is decolorized much more rapidly and completely by boiling alcohol. Alkaline liquids do not turn the colour; acids precipitate the colouring-matter in yellowish flakes.

To recognize a tissue dyed red by coralline, it is sufficient, according to M. Tardieu, to detach several fibres, cut them into small fragments, and submit them for several minutes to the action of a small quantity of boiling rectified spirit. The alcoholic liquid assumes a bright red, and the tissue, almost completely decolorized, assumes an apricot-yellow tint. The addition of ammonia or caustic potash to the red alcoholic liquid brightens the colour, and distinguishes definitely between coralline and aniline red.

Detection of Prussic Acid in the Blood.

In an article* on the toxicological investigation which took place on the murder of the Countess Chorinsky, M. Buchner gives some interesting remarks on the detection of prussic acid in the blood. In this case the blood was of clear cherry-red, and preserved this tint for several days. At the end of five days it was still perfectly liquid, and some weeks elapsed before it gelatinized. It resisted putrefaction for a long time when preserved in a stoppered bottle, but the red globules were destroyed in a few days. It presented no odour of prussic acid, but when diluted with water and distilled, the first portions of the distillate possessed a distinct smell of the poison, and gave positive results with the usual tests. By this means the acid was detected, even after the lapse of fifteen days. M. Buchner found Liebig's test (sulphide of ammonium) to be the most delicate.

Several years ago, Schönbein showed that the blood globules decompose, oxygenated water liberating ordinary oxygen; but the blood diluted with twice its volume of pure water, and containing a small quantity of prussic acid, loses almost entirely this catalytic action, while the mixture assumes a deep brown colour. This reaction affords the means of recognizing an infinitesimal quantity of prussic acid. Thus, if 50 grammes of defibrinated ox-blood be mixed with 450 grammes of water and 5 milligrammes of anhydrous prussic acid, the mixture becomes deep brown in presence of oxygenated water. In this case Buchner found Schönbein's test to be a very valuable and delicate one. The blood, however, should not be very old, because then the blood has attained a deep colour, which the oxygenated water does not change.

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* 'Revue des Cours Scientifiques' and Journ. de Pharm.

Crystallized Digitalin.

M. C. A. Nativelle finds that crystallized digitalin often contains a notable quantity of another crystalline principle, which exists associated with it in the digitalis but is inert and devoid of any bitter taste. This substance is insoluble in chloroform, while pure digitalin freely dissolves in that menstruum. M. Nativelle recommends the following method for obtaining pure digitalin in crystals:—100 parts of powdered digitalis are mixed with a solution formed of 100 parts of water and 25 parts of crystallized acetate of lead; after twelve hours' maceration, this mixture is exhausted with water in a displacement apparatus. About 300 parts of liquid are thus collected, which may be set aside for the extraction of *digitalein;* the digitalin remaining entirely *in the residue*. This residue is dried, and then exhausted by displacement with alcohol of 50° (sp. gr. 935). About 300 parts of alcoholic tincture are obtained, to which a solution of 4 parts of acetate of lead is added; the mixture is filtered, and the decolorized liquid mixed with a solution of 2 parts of phosphate of soda; the precipitate is again separated, and the liquid distilled in a water bath to recover the spirit. The residue of the distillation contains in suspension some small crystals and a pasty glutinous mass. These crystals are chiefly the inert substance already referred to; the digitalin is in the glutinous mass. The whole is evaporated by the water bath to about 10 parts, and the dense liquid separated from the deposit, which is then washed with a little cold water and spread on filter paper. From 2 to 3 parts of this matter are obtained; it is dissolved by heat in twice its weight of alcohol of 60° (sp. gr. 914), and allowed to crystallize in a cold place. The inert substance deposits first, and after some days the digitalin separates out in yellowish radiating opaque crystals. The crystalline deposit is afterwards drained, washed slightly with weak spirit, redissolved in hot alcohol of 80° (sp. gr. 864), with a little animal charcoal, and again crystallized. These crystals are dried, powdered and agitated with 20 parts of pure chloroform; the digitalin dissolves, leaving the inert substance insoluble. Upon distilling off the chloroform the crystallizable digitalin remains, still however possessing a yellow colour. It is further purified by animal charcoal and re-crystallization from alcohol. 1 part of pure crystallized digitalin may be obtained from 1000 parts of digitalis which has been exhausted by water.

Crystallized digitalin is neutral, non-nitrogenous, without odour, and of an intense bitter taste, especially perceivable in the state of alcoholic solution. It dissolves in all proportions in cold chloroform; its purity may be recognized by this character. Rectified spirit dissolves about one-twelfth part in the cold, and one-half at the boiling-point. Absolute alcohol is a less perfect solvent. Ether, benzol, and water only take up traces. Sulphuric, nitric, and hydrochloric acids dissolve it with coloration.

APOMORPHIA, A NEW BASE DERIVED FROM MORPHIA.

In noticing the objects exhibited at the Conversazione of the Pharmaceutical Society in the last number of this Journal, we alluded to a new base which has recently been produced as the joint discovery of Dr. Matthiessen, F.R.S., and Mr. Wright, B.Sc., of St. Bartholomew's Hospital. We were then only enabled to state that this base was produced from morphia, and that it possessed the properties of a powerful non-irritant emetic and contra-stimulant. Since the publication of that notice a paper by Dr. Matthiessen and Mr. Wright has been read before the Royal Society, an abstract of which has appeared in the 'Chemical News,' and is as follows:—

"When morphia is sealed up with a large excess of hydrochloric acid, and heated to 140°–150° for two or three hours, on opening the tubes after cooling, no gas is found to have been formed, nor is there any formation of chloride of methyl. The residue in the tube contains the hydrochlorate of a new base, differing considerably in its properties from morphia. It may be obtained in a state of purity by dissolving the contents of the tube in water, adding excess of bicarbonate of sodium, and extracting the precipitate with ether or chloroform, in both of which the new base is readily soluble, whilst morphia is almost insoluble in both menstrua. On shaking up the ethereal or chloroform solution with a very small quantity of strong hydrochloric acid, the sides of the vessel become covered with crystals of the hydrochlorate of the new base. These may be drained from the mother liquors, washed with a little cold water, in which the salt is sparingly soluble, and re-crystallized from hot water and dried on bibulous paper or over sulphuric acid.

"This hydrochlorate contains no water of crystallization. After drying in the water-bath, it yielded results on combustion with chromate of lead and oxygen agreeing with the formula $C_{17}H_{17}NO_2HCl$.

"From a solution of the hydrochlorate in water, bicarbonate of sodium precipitates a snow-white non-crystalline mass, which speedily turns green on the surface by exposure to air, and is therefore difficult to obtain dry in a state of purity. This precipitate is the base itself.

"It hence appears that the new base is simply formed from morphia by the abstraction of the elements of water.

$$\overset{\text{Morphia.}}{C_{17}H_{19}NO_3} = H_2O + \overset{\text{New base.}}{C_{17}H_{17}NO_2}.$$

"We propose to call the new base apomorphia, for reasons given subsequently.

"When the hydrochlorate of apomorphia in a moist state is exposed to the air for some time, or if the dry salt is heated, it turns green, probably from oxidation, as the change of colour is accompanied by an increase of weight. The base itself, newly precipitated, is white, but it speedily turns green on exposure to air. The green mass is partly soluble in water, communicating to it a fine emerald colour,—in alcohol yielding also a green tint, in ether giving a magnificent rose-purple, and in chloroform with a fine violet tint.

"The physiological effects of apomorphia are very different from those of morphia; a very small dose produces speedy vomiting and considerable depression, but this soon passes off, leaving no after ill-effects,—facts of which we have repeatedly had disagreeable proof while working with it."

"Dr. Gee is now studying these effects, and has found that $\frac{1}{10}$th of a grain of the hydrochlorate subcutaneously injected, or $\frac{1}{4}$ grain taken by the mouth, produces vomiting in from four to ten minutes. Our friend Mr. Prus allowed himself to be injected with $\frac{1}{10}$th grain, which produced vomiting in less than ten minutes. From Dr. Gee's experiments on himself and others, he concludes that the hydrochlorate is a non-irritant emetic and powerful anti-stimulant. As from these properties it appears probable that it may come into use in medicine, we have called it apomorphia, rather than morphinine, to avoid any possible mistakes in writing prescriptions."

THE PATENT MEDICINE STAMP, ETC.

The following is a copy of the plan for altering the duties payable on patent medicines, which Mr. Breton desired to bring before the annual meeting of the Pharmaceutical Society on the 19th of May:—

"Firstly,—That every person who shall make a medicine, either for internal or external use, affecting the human body, and having a printed label thereon, shall, for such medicine or medicines, obtain a certificate before he can prepare, from our or one of the other learned institutions competent to grant, and on the production of this certificate alone shall the excise be empowered to grant a licence to the manufacturer; and for this licence I propose that the sum of one guinea shall be charged, and, further, to place the small manufacturer on the same footing as the large, I propose an additional sum of 5 per cent. on all goods over and above the first £200, retail value, and the returns shall be made on the 31st of March in each year, and, in the absence of this, the excise can surcharge as in other taxes.

"By the compulsory use of this certificate, I maintain that we shall secure the manufacturing of medicines and their sale to the public by qualified and certificated persons, and thereby prevent the hawking of quack nostrums throughout the country. This practice is too familiar to my fellow-members to need a long digression. This would likewise prevent the exhibitions one often sees at markets and fairs in the country and in the suburban districts of London, of hideous pictures illustrating the action of their vile drugs.

"I propose the penalty for infringement of the certificate should be £20.

"The Pharmaceutical Society to be compelled to prosecute on the evidence of sworn witnesses.

"Secondly,—I propose to abolish all distinctions between town, country, and London, in the price of the licences, and to make one uniform price for all who shall keep medicines for public sale, either prepared by themselves or others, having a printed label thereon; and that they must obtain a certificate before they can keep or offer a medicine for sale. This certificate to cost one guinea.

"Thirdly,—All persons who shall sell patent medicines wholesale, not of their own manufacture, shall, in addition to the manufacturer's licence (if he makes), or the retailer's (if he retails), obtain a licence of ten guineas.

"Fourthly,—This division requires serious consideration; it has become a national evil, and ought, like the cattle plague, to be exterminated. I mean the wholesale introduction of what are styled patent medicines. As free-trade must exist in physic as in other things, I propose to place the foreign manufacturer on the same footing as ourselves—he must pay the manufacturer's licence, also the retail if he has a depot in this country; and the wholesale licence must be paid whether the depot is separate or connected with another establishment; and these separate licences are to apply to every distinct patent. Manufacturers of one or more will be considered as one, and the depot where a foreign patent is purchased shall be considered the depot of the importer till the contrary be proved.

"I have endeavoured to point out each class of patents which come under our notice, and will now give you my estimates of the amount to be obtained from the various licences.

"1. The manufacturer's	£12,200
2. 5 per cent.	5,000
3. Retail chemists	13,000
4. ,, dealers not chemists	10,000
5. Wholesale	10,000
6. Foreign patents	5,800
	£56,000"

POISONING BY SUBSTITUTION OF CYANIDE OF POTASSIUM FOR CARBONATE OF AMMONIA.

INQUEST HELD IN DUBLIN ON THE LATE MR. F. GRATTAN GUINNESS, 7TH AND 8TH OF JUNE, 1869.

The above case of accidental poisoning has created in Dublin intense excitement, partly from the rarity of such accidents in Ireland, and also from the social position which Mr. Guinness held. The inquest extended over two days. Mr. C. Swayne, the assistant who compounded the medicine, was in custody during the first and part of the second day's proceedings. He was an assistant to the firm trading under the name of Hamilton, Oldham, Long, and Company, who have two establishments in Dublin, and are now about to open another at Kingstown. Mr. Darley, Q.C., appeared for the relations of the deceased, and Mr. Macdonogh, Q.C., represented the firm in whose establishment the mistake occurred.

The first witness called was Mr. Edward Sadlier, clerk to the Messrs. Burke, wine merchants, 16, Bachelor's Walk. He deposed that on Saturday, the 5th of June, the deceased gentleman, who had an office in the same house, came there; on the previous day he told witness to send the two empty bottles that were on his desk to Oldham's, to have them filled with the same mixture that had been in them before; witness sent the bottles by one of the porters, named Lynham; when witness came to the office on Saturday morning he found two bottles papered up, sealed and directed to the deceased; later in the day he saw the deceased with a bottle in his hand, which he held up to the light, and said, "This is not the same they gave me before; what I got before was brown; I am sorry I did not show it to Dr. Bourke before he went." He then opened the bottle and put it to his mouth. Witness said to him, "You had better not take it, take care." Soon after he left the room and went into his own, and the deceased went out of the office, and came back in, perhaps, half an hour; the deceased then had a bottle containing a brown fluid in his hand; he said, "They have given me another bottle." The bottle containing the brown fluid was a different one from that which he had at first. Witness then went into his own office, and deceased soon came in, and went to the opposite side of the desk at which he was standing, and said, "It is choking me! it is choking me!" He made a peculiar moan, as if his throat was affected. Mr. John Burke came in from the store at the moment, and witness said to the deceased, in his presence, "Take care; have they given you poison?" He then went into Mr. Burke's office; Mr. John Burke came running in, and said, "Run for Dr. Bourke! Witness ran to the stores, and sent a vanman for the doctor; witness went to Butler's, in Sackville Street, and brought one of the gentlemen from that establishment. When they came back, the deceased had been brought into a back room, and he found that he was dead.

Dr. W. M. Bourke said he had known the deceased from his childhood, and was his medical adviser. On the 25th of May had prescribed for him a strengthening mixture, which was prepared at Oldham and Co.'s, in Grafton Street. He had been in a low, weak state, and suffered especially from a weak action of the heart.

Mr. Edward Long, a member of the firm of Hamilton, Oldham, Long, and Company, explained the circumstances under which the mistake had occurred. It appeared from the evidence of this witness, and that of the porter, George Hudson, that it was the practice of the firm, in replenishing bottles from the stores, to have a double check against mistakes, by requiring that the empty bottles should be filled in the presence of two persons. In this instance, however, the rule had been departed from. The assistant, Mr. Swayne, finding the carbonate-of-ammonia-bottle empty, gave it to George Hudson, the porter, to be filled, but did not see it filled. The porter found a stone-jar at the top of the stairs, containing a white salt, which he thought was carbonate of ammonia, and with this the bottle was filled. The jar had no label to it, and proved to contain, not carbonate of ammonia, but cyanide of potassium. This was used by the assistant in preparing Mr. Guinness's medicine, which should have consisted of infusion and tincture of bark, cinnamon-water, and carbonate of ammonia, to be taken with lemon-juice. The dose taken by the deceased contained twenty grains of cyanide of potassium. It was stated that Mr. Swayne, the assistant, was busily engaged in dispensing, and was therefore unable to accompany the porter in filling the empty bottle; also that the bottle into which the cyanide of potassium was put, retained sufficient ammoniacal smell to disarm suspicion which would have arisen from the absence of this character. On the explanation of these circumstances, Mr. Swayne, who was previously in custody, was set at liberty before the conclusion of the inquiry.

The jury, after a lengthened investigation, returned the following verdict:—

"We find that Frederick Darley Grattan Guinness accidentally came by his death, on Saturday, the 5th day of June, 1869, from a dose of poisonous medicine, compounded by mistake at the establishment of Messrs. Hamilton, Oldham, Long, and Company, No. 107, Grafton Street, and we consider that there was not sufficient circumspection taken there for the public security, on which account we strongly urge the necessity of strict precaution being observed by the firm, against whom we feel obliged to record our deep censure."

POISONING BY SUBSTITUTION OF STRYCHNIA FOR MORPHIA.

A case of poisoning with strychnia, attended with some peculiar circumstances, has been undergoing a lengthened investigation before the coroner at St. David's, Pembrokeshire, and, after several adjournments, was brought to a conclusion on the 31st of May.

The inquiry related to the death of Essex T. Williams, surgeon, late of Dunstable, Beds. It appeared from the evidence of the widow and sister of the deceased, that he had been in ill-health for some months, and had gone to live at Penberry, near St. David's. He was in the habit of taking solution of acetate of morphia as a sedative, and on his journey to St. David's, in passing through Haverfordwest, had obtained a supply of the solution there, which he took with the usual effects. On arriving at Penberry, the bottle being emptied, was given to Mr. Hicks, a surgeon of St. David's, whose mother, a widow, keeps a chemist's shop at the latter place, with instructions to get it replenished. An order in writing was also sent for the medicine, and Mrs. Hicks, who is a registered chemist and druggist, and conducts the business with the assistance of her daughter, but does all the dispensing herself, prepared the solution from a bottle labelled acetate of morphia, which she had received, three years ago, from a wholesale druggist in Bristol. In making the solution, however, she used, not the British Pharmacopœia, but the London Pharmacopœia of 1851, which she said she had been accustomed to use for the last thirteen years. She described very circumstantially the preparation of the solution; producing the book she had used as her authority (which, however, had ceased to be such), she turned to the formula for solution of acetate of morphia, and mixed 4 grains of acetate,—taken from the bottle referred to,—2 drops of acetic acid, 1 drachm of spirit of wine, and 3 drachms of water, thus making altogether 4 drachms of solution. This, even if it had contained acetate of morphia, as it purported to do, would have been twice as strong as it ought to have been, on account of its having been made according to the London instead of the British Pharmacopœia; but, in fact, as appears from the evidence, it not only contained a double proportion of the active ingredient, but this ingredient was not what the label indicated, but strychnia, or one of its salts. For this Mrs. Hicks does not appear to have been in any way responsible. She had ordered acetate of morphia some three years ago, and the powder she now used for making the solution was supplied to her with a label bearing that name. She had not previously used it, but her son, the surgeon, had used two grains of it in a mixture on one occasion without any ill effects. The solution, prepared as we have described, was conveyed to Mr. Williams, at Penberry, and a dose, which, under any circumstances, would have been a large dose, was taken by the deceased. His instructions to his wife were to give him 180 minims (fl. ʒiij), measured with a minim-measure, and this he took mixed with orange-juice. Shortly after taking it, he remarked, "I feel very strange, like a person drunk." He then directed the clothes to be thrown off him, and shortly afterwards exclaimed, "They have made a mistake; they have given me strychnia for morphia." At this moment a medical man, Mr. Wathen, happened to call, whose evidence was to the following effect:—

"When I got to the bedside, I asked him what was the matter. He said, 'I have been poisoned; they have given me strychnine instead of morphine.' He was then much cramped. I told him that such a mistake was very improbable. He answered, 'What is the meaning of these horrid spasms?' He was then convulsed again. I examined his eyes; the pupils were dilated, the pulse full and rapid. I called for mustard, but he could not swallow it. The convulsions became more rapid. They were of a peculiar character. The back and body of the deceased became rigid and arched, the head was bent backward, and I believe he rested on his head and heels. The slightest touch of his person brought on tetanic spasms. He frequently cried out, 'Hold my legs; lift the clothes off.' The last words he used were, 'Oh, kill me, kill me.' At length he had a severe convulsive attack, the whole body became rigid and arched, the colour of the face became dusky and almost blue. This attack lasted about a minute. During the spasm he had a sardonic grin, the teeth were exposed, the muscles of the face drawn, and in that condition he died. These are distinctive marks of death from strychnine. My opinion, from what I have seen and heard, is that death was occasioned by strychnia. From the time I entered the room to the time of his decease was about five minutes. I have analysed a portion of the contents of the bottle produced, received from Sergeant Wade. I opened it, took out a portion of the contents. I then sealed up the bottle again, and delivered it back to Wade. I took a part of this portion and analysed it myself. The result of my analysis was that it contained a salt of strychnine, and no morphine. I applied the colour-tests, every one of which proved the presence of strychnine and the absence of morphine. Thirty minims of the solution—that is, half a grain of the contents of the bottle—were administered to a rabbit, which had arching of the back, sardonic grin, pupils dilated, prominent eyes, and death ensued in less than one minute. Half a grain of morphia would not produce such effects upon a rabbit; it might act as a sedative."

The traveller for the wholesale house in Bristol also gave evidence, but did not attempt to deny that the salt used as acetate of morphia had been supplied by mistake.

The jury, after deliberating for some time, gave a verdict of "Poisoned by misadventure."

POISONING BY SUBSTITUTION OF STRYCHNIA FOR SUGAR.

An inquest was held at the Town Hall, Gravesend, Feb. 25th, before Mr. E. A. Hilder, coroner for the borough, on the body of Catherine Sarah Cobham, an infant, aged one year and nine months, who was accidentally poisoned with strychnine, dispensed by a chemist in mistake for powdered sugar. The father deposed that his child had suffered from teething. On Tuesday evening, between five and six o'clock, he went to the shop of Mr. Rosseter, chemist, 2, New Road, and asked for some medicine for the child. Mr. Rosseter went into a dispensing-room adjoining the shop, and in a few minutes returned and handed to him two powders labelled "Teething Powders," and told him to administer one of them to the child at bedtime. He did so; the infant fell asleep, and witness laid it on a pillow, and went to a reading-room in the neighbourhood. On his return, about ten o'clock, he found the child quite stiff, her eyes staring and her hands clenched. Dr. Gramshaw attended, but was unable to save her life. She expired at a quarter past one o'clock on the following morning. John Rosseter deposed that he was a registered chemist and druggist of sixteen years' experience, and had entered upon the business in the New Road of this town on the day of the unfortunate occurrence. On the evening of that day, when the last witness came for medicine for his child, he used medicines from two bottles which were on the shelves in the dispensing-room. One contained antimonial powder, and the other, as he believed at the time, powdered sugar, but which was afterwards found to be strychnine. Immediately after Mr. Cobham had left the shop he discovered that he had made a mistake, and, being an entire stranger in the town, could not tell who the purchaser was. He communicated with the police, and did everything in his power to find him, but without success. Charles Davis, a chemist, who had carried on business at the shop for a considerable time past, stated that he was in the house at the time, but not in the shop. The bottle from which the poison was taken was labelled "strychnia," and was kept with other drugs indiscriminately in the dispensing-room. He attributed the accident on the part of Mr. Rosseter to his having mistaken the word "strychnia" for "saccharum." It was not customary for chemists to label their bottles "poison," in addition to the ordinary label as to the contents. James Henry Gramshaw, M.D., stated that on arriving at the house of the first witness he found that the child was suffering from tetanic spasms, and the symptoms were such as would be consequent on taking strychnine. He applied the usual remedies in such cases, but they were of no avail, and the child expired shortly after one o'clock. The jury, after half an hour's deliberation, returned a verdict of "Death from misadventure," appending thereto a censure upon the manner in which the poisonous medicines had been kept.

POISONING BY BELLADONNA.

At Foxdale, Isle of Man, on Saturday, May 22nd, Captain Bawden, of the Foxdale mines, together with three miners, one of whom is named Thomas Christian, went out in search of a vein of lead which is supposed to be in the neighbourhood. After awhile, feeling tired, they sat down to take rest. While sitting on the ground, Christian got hold of a shrub that was growing close to him, and pulled it out of the ground by the root. Seeing that the root was very like a carrot, he thought there would be no harm in eating some of it. He accordingly ate a portion of it, and gave a piece to each of his companions, two of whom, Captain Bawden and one of the other men, fortunately for themselves, only just tasted it. A few moments after eating the piece of root, Christian was seized with violent convulsions, and Captain Bawden and the other who had tasted the root also began to feel similar symptoms. Captain Bawden at once hurried home for the purpose of procuring an emetic, and the other man who had taken a small portion ran off to a neighbouring cottage to get some milk, which he thought would prove an antidote. Christian was thus left in the care of the fourth man, who had been sufficiently cautious not to touch the root; and it is stated that in less than ten minutes from the time of eating the root Christian was dead.

In the 'Liverpool Mercury,' the paper in which the case is reported, the plant is incorrectly described as *Solanum Dulcamara*. This error is pointed out by Dr. Dudgeon in the 'Times,' who states that he believes there is no case on record where death has ensued so speedily from *Atropa Belladonna* as in this instance.

ARTIFICIAL CHAMPAGNE.

In the August issue of the 'Wine Trade Review,' 1865, we drew the attention of the trade to a new method of making champagne which was then carried on by a chemist in London. We now reprint *verbatim*, *minus* name and address, a prospectus of the inventor for making artificial champagne, which, according to his proposals for selling the knowledge, can be made at about twopence per bottle. This certainly surpasses our English chemist, who made his champagne from low-priced French white wine passed through a soda-water machine, by which it was copiously charged with carbonic acid, giving it the required degree of effervescence, which, it is needless to say, almost instantaneously passed off when the bottle was opened. We quite believe in the truth of the manufacturers' promise—"In transmitting our process of production for artificial champagne, *we join the plan of our apparatus to fabric instantaneously vinegar.*" And what would be the state of the stomach after partaking of this vile concoction? Commercial morality must be at a low ebb if it adopts this wretched invention for the purpose of gain.

TO DELIVER FOR ALL COUNTRIES

FABRIC OF ARTIFICIAL CHAMPAIGN WINE.

ESTABLISHMENTS TO FORM IN EVERY LOCALITY.

Patent of Invention for Belgium, France and Pontifical Estate.

Sole production of artificial champaign, grand mousseux first quality, the fabric price being only from seven to eight centimes per bottle. This production is owned to the analysis of the wines (fermenting) of Epernay, Ay, Chalons, etc.; it is produced by infusion, is clear, very fermenting, has the taste of the true champaign wine and betters in getting old.

Price of production per thousand bottles.	Raw materials	fr. 60	Together 240 frs.
	Corks, tin, twine	„ 15	
	Wages, one days work . .	„ 5	
	1000 bottles, the hundred 16 f.	„ 160	

In selling the thousand bottles at one franc each one realizes a profit of 760 francs.

The arrears of this production can be transformed in excellent vinegar, indicating 25 to 26°, capable to rivalize with that of Orleans. In transmitting our process of production for artificial champaign wine, we join the plan of our apparatus to fabric instantaneously vinegar. Important profits, concurrence made impossible (Patented in March 1859).

CONDITIONS FOR DELIVERING OF THE PRIVILEGE.

We deliver the right to employ our fabricmark for the whole duration of our patent, 1869 till 1885—15 years for the price of *one hundred francs*, payable per post-assignation or in banknotes, letters franked and recommanded. The proceeding and instructions to fabric this artificial champaign wine, given by letter, are sufficient to make all necessary manipulation, knowledge of the raw materials, and to obtain the same results as ours.

At foot the protocoll of the society of industrious sciences of Paris and a third list of the Papentees.

For Belgium, the Netherlands, Germany, Spain, Italy, England and Switzerland to adress oneself; per letter franked, to

Messs. —— et Co., Chemists, Belgium.

For cessions for France to direct to Paris.

—*The Grocer*, June 19.

Obituary.

At Ripon, June 15th, aged 71, Richard Graves, an old member of the Pharmaceutical Society. He commenced business at Ripon in 1818, which business he occupied until his death. Besides having a leech-pond, he was a grower of medicinal herbs.

BOOKS RECEIVED.

An Introduction to the Elements of Pharmacy; or, "The Minor and Major Examinations." A Guide to the Principal Points in Materia Medica, Botany, Chemistry, Pharmacy, Prescriptions, and Practical Dispensing. By F. Harwood Lescher, Pereira Medallist. London: John Churchill and Sons, New Burlington Street. 1869.

Nouveaux Elements d'Histoire Naturelle Medicale. Par D. Cauvet. 2 vols., with 409 illustrations. Paris: J. B. Baillière et Fils. London: Hipp. Baillière. Madrid: C. Bailly-Baillière. New York: Baillière Brothers.

The Disinfectant Question: Review of a Book by Dr. R. Angus Smith, entitled 'Disinfectants and Disinfection.' Reprinted from the 'Sanitary Record.' London: M'Corquodale and Co. 1869.

CORRESPONDENCE.

Persons having seceded from the Society may be restored to their former status on payment of arrears of subscription and the registration fee of the current year.

Those who were Associates before the 1st of July, 1842, are privileged (as Founders of the Society) to become Members, and by virtue of membership to be registered as *Pharmaceutical Chemists*.

Length of the Metre.—Mr. James Brown, Ampthill, directs attention to the fact that the Pharmacopœia, in giving the equivalent of the metre in English measure, states that it is = 39·37079 inches, or 1 yard 3·7 inches. This is obviously a mistake. It should be 1 yard, 3·37 inches.

Liniments of Aconite and Belladonna.—Mr. Gissing, Wakefield, wishes for answers to the following questions from some practical pharmaceutist:—

1. In making lin. belladonnæ and lin. aconiti, how much spirit is used in moistening the roots?
2. How much additional spirit is used to produce the result ordered?

J. C. (Manchester).—We are unable to suggest any improvement in the mixture described, but liquids prepared for staining wood are sold, and one of these would probably answer the purpose better.

Syrupus Ferri et Calcis Hypophosphitis.—Mr. Gomasall, in reply to a correspondent, *Ext. Carnis*, in last month's Journal, sends the following formulæ from Parrish's book:—

SYRUP OF HYPOPHOSPHITES.

(Containing *Ferric* Hypophosphite.)

Take of—

Hypophosphite of Lime .	256	grains.
" Soda .	192	"
" Potassa	128	"
" Iron (recently precipitated) .	96	"

Hypophosphorous acid, sp. gr. 1·036	240 grains, or *q. s.*
White Sugar	9 ounces.
Water	sufficient.

Dissolve the salts of lime, soda, and potassa in six ounces of water, put the iron-salt in a mortar, and gradually add hypophosphorous acid till it is dissolved; to this add the solution of the other salts, after it has been made slightly acidulous with the same acid, then add water till the whole measures twelve fluid ounces; dissolve in this the sugar with a gentle heat. Dose: one fluid drachm.

SYRUP OF HYPOPHOSPHITES.

(Containing *Ferrous* Hypophosphite.)

Take of—

Hypophosphite of Lime .	256	grains.
„ Soda . .	192	„
„ Potassa .	128	„
Protosulphate of Iron, cryst.	185	„
Carbonate of Soda	240	„
Hypophosphorous acid, sp. gr. 1·036	3¼	fl. ounces.
Sugar	12	ounces.

Dissolve the protosulphate of iron and carbonate of soda, each separately, in four fluid ounces of water, and mix the solutions. Wash the precipitated carbonate of iron with sweetened water, and drain on a muslin filter.

Having placed the salts of lime, soda, and potassa in a suitable porcelain dish, add about two fluid ounces of water, and one fluid ounce of hypophosphorous acid; heat the mixture gently, and add the moist carbonate of iron in small portions from time to time, alternately with hypophosphorous acid, until the solution is complete.

Add sufficient water to make the whole measure ten fluid ounces, pour it into a bottle containing the sugar, and make a perfect solution by agitation.

The dose of this is a fluid drachm.

Uniformity of Prices.—The chemists of Dumfries, guided by the example of their Edinburgh brethren, have unanimously adopted a uniform dispensing price-list and private mark.—June 17, 1869.

M. R. (Southampton).—*Lime-juice and glycerine* (so-called), see Vol. VIII. (N. S.) p. 679.

J. F. T. (Kettering), wishes to know what quantity of Gingerine is yielded by ginger.

P. P. (North Walsham).—'Hooper's Medical Dictionary' would probably answer the purpose—published by Longman and Co.

"*Quærens*" (Bayswater).—*Liquid cochineal*, Vol. VIII. p. 443.

F. L. S.—As a rule, qualified dispensers are not appointed to ships in the merchant service.

"*Quærens*" (Greenwich).—*Amomum Granum-paradisi.*

C. C. (Lewisham).—Syrup of hypophosphite of lime may be made in the proportion of 3 grains of the salt to 1 ounce of simple syrup. Syrup of hypophosphite of soda, in the proportion of 5 grains of the salt to 1 ounce of syrup.

The Grievance of Apprentices.—Mr. T. H. Smith, Newport, Isle of Wight, in commenting on the injustice done to apprentices by the new Pharmacy Act, is of opinion that all those who had been engaged in dispensing prior to the passing of the Act should, on obtaining a certificate of competency from a medical man and a chemist and druggist, be registered; and he hopes that petitions to this effect will be presented to the Society from every town.

H. J. B.—(1.) The chromic acid battery is constructed without porous cells. Plates of zinc and carbon are immersed in a mixture of bichromate of potash and oil of vitriol, sufficient of the latter being used to decompose the former. There is no evolution of gas, but the plates must be withdrawn from the solution when the battery is not in action. (2.) Oleate of soda may be made as described, but it is difficult to get it neutral.

W. R.—There may be differences of opinion, as no doubt there are, as to the limits of the capability of Nessler's Test for detecting ammonia. We should say about 1 in 20,000,000. The preparation of the test is well described in Wanklyn's book, which you appear to have.

X. F.—(1.) No. (2.) Apply to the Registrar, 17, Bloomsbury Square.

J. T.—No.

Communications for this Journal, and books for review, should be addressed to the EDITOR, 17, Bloomsbury Square. Those received after the 20th of the month cannot be noticed in the ensuing number.

Instructions from Members and Associates respecting the transmission of the Journal before the 25th of the month, to ELIAS BREMRIDGE, Secretary, 17, Bloomsbury Square, W.C.

Advertisements (not later than the 23rd) to Messrs. CHURCHILL, New Burlington Street.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. II.—AUGUST, 1869.

THE DESIGNATION OF MEDICINES AND THE USE OF SECRET REMEDIES.

To supply the remedy which the physician has prescribed is the responsible duty of the pharmacist,—a duty the performance of which, in accordance with the intention of the prescriber, sometimes involves questions that are not easily solved. One source of difficulty in cases of this description is the use of indefinite terms to designate medicines. If a physician orders *syrup of hypophosphite of iron and lime*, or *syrup of phosphate of iron*, *quinine*, *and strychnia*, how is the medicine to be prepared? Do those terms bear such a definite signification as to leave no doubt of the physician's intention? Medicines are frequently ordered in prescriptions which, like those just named, are not officially recognized, and some doubt may exist with reference to their composition and strength. It should always be the object of the dispenser to ascertain and to carry out what was intended by the physician; and in furtherance of this object it is desirable that there should be some simple rules to be observed alike by prescriber and dispenser in the use and interpretation of names applied to medicines that are not officinal. Thus, for instance, if a medicine has been introduced under a particular name in connection with which it was first made public, this name should be considered to apply to that rather than to any other similar medicine which might be afterwards introduced under the same name, unless there should be some strong ground for doing otherwise, and such ground there might be in the existence of a general and decided preference among medical men for some other than the first medicine introduced under the name used.

Now, referring to a case respecting which there has recently been some correspondence in the medical journals, there is no doubt, we believe, that the name chlorodyne was first applied by Dr. Collis Browne to the medicine prepared and sold under that name by Mr. Davenport; and we are not aware, although medicines differing from this in composition are sold under the same name, that preference is given to any of those over the original one, while the latter is that by the use of which the reputation of chlorodyne has been established. If, therefore, chlorodyne is prescribed without anything to indicate which sort is intended, it seems right to use Davenport's. This would be acting in accordance with the rule we have referred to, and it would also accord, we believe, with the practice in the best dispensing establishments.

But Davenport's chlorodyne is a secret as well as a proprietary medicine, while some of the other medicines sold under the same name are of known composition; and it may be doubted whether we ought to encourage the use of a nostrum the composition of which is not known, while a similar remedy is offered us of known composition. If it could be shown that the medicine prepared by any one of the published formulæ is identical in composition or equal in efficacy with the chlorodyne the reputation of which has been established, scarcely a question could exist as to the proper course to be adopted, but it cannot be said that this point has yet been determined. Among the formulæ published for the preparation of chlorodyne, probably the best known is that given by Mr. Squire, in which morphia is named as one of the ingredients; but the proportion of morphia given in this formula is so small (only a quarter of a grain to an ounce) that it can hardly be conceived the sedative effects of the medicine are due to this ingredient. Another formula has been published ordering four grains of morphia to the ounce, and thus two preparations, both purporting to represent the true chlorodyne, differ in strength to this great extent. In the correspondence to which we have alluded, Dr. Collis Browne warns the profession against patronizing the published formulæ, or any of the medicines called chlorodyne other than his own. It appears that in a case of poisoning with chlorodyne containing four grains of morphia in an ounce, and made from a formula published in the 'Canada Lancet,' the pupils of the eyes were contracted, indicating the action of morphia, and with reference to this, Dr. Collis Browne says that his chlorodyne *never contracts the pupil.* This is a point deserving of notice in connection with the investigation of the subject. Dr. Browne denies that Mr. Squire's formula represents his chlorodyne. He says, "*Liq. chloroformi comp. is one thing; chlorodyne is totally distinct.*" On the other hand Mr. Squire states, in a letter addressed to the medical journals, that "Liq. chloroformi comp.," for which the formula is given in his 'Companion to the British Pharmacopœia,' "approaches very closely in composition the compost sold as chlorodyne, and enables medical men to prescribe a medicine they know the composition of."

We have received the following communication on this subject from Dr. Kidd:—

CHLOROFORM AND CHLORODYNE.

Sackville Street, July 20th.

SIR,—Mr. Squire, of Oxford Street, advocates a somewhat fixed and recognized formula for the medicine so generally known under the name of chlorodyne. I very much agree with him, as three deaths have already been ascribed to the unskilful administration of this uncertain remedy; and a discussion has arisen in the medical journals as to what, under such circumstances, would be the proper antidote when dangerous symptoms should have set in. A somewhat fixed formula would not, of course, interfere much with the pharmaceutical skill required to prepare and mix the theriac, morphia, hydrocyanic acid, chloroform, zingiber, ether, etc., for it is really a very valuable medicine. It is unfair to visit its accidents, however, on chloroform alone.

I am, etc.,
CHARLES KIDD, M.D.

We agree with Dr. Kidd in thinking that chlorodyne is a valuable medicine, and although, with the imperfect knowledge we at present possess of the proper method of preparing it, we may not be justified in using any of the mixtures of known composition, bearing the name of chlorodyne, in dispensing medicines, yet we think good service is rendered by submitting formulæ for the preparation of this medicine, which may assist in furthering the investigation of the subject and the adoption of a form which may be worthy of official recognition.

THE MEDICAL COUNCIL.

The sessional meeting of this body for the present year has taken place in the month that has just ended, having commenced on Thursday, the 1st, and terminated on Monday, the 12th of July. Several important subjects have come under the consideration of the Council, and some of these have been very fully discussed.

Questions relating to the amendment of the Medical Acts were submitted to the Council in a communication from the medical department of the Privy Council Office, in which the Lord President, through Mr. Simon, called attention to a deficiency in the qualification of some medical men who are admitted to the medical register on a minimum qualification in surgery without any qualification in medicine, and similarly on a minimum qualification in medicine without any qualification in surgery. It is represented by the Lord President that this defect should be remedied by any Medical Act it might be thought desirable to pass. Reference was also made in the same communication to the constitution of the Medical Council, with the view of eliciting from the members of the Council whether they considered a change in this respect desirable.

These and other subjects connected with medical reform occupied much of the attention of the Council, but no conclusive decisions were arrived at with reference to them. One of the questions discussed was as to the desirability of having a class of medical men, recognized by law, who should possess a qualification in *State Medicine,* by which they would be specially qualified to express opinions and give evidence on subjects affecting the public health, where such questions arise in courts of law or otherwise; and on this subject the Council resolved "That in any amended Medical Bill which may be prepared for Parliament by the Council, it is desirable that the requisite permissive clauses for registering a qualification in State Medicine be inserted, in addition to any of the qualifications sanctioned by the Medical Act."

The Committee to whom the subject of the Amendment of the Medical Acts was referred, in their comprehensive report, allude to the question raised by the Lord President of the Privy Council as to the constitution of the Medical Council. They say,—

"The duties imposed on the Council by the Act are four, viz. the supervision of medical education, the registration of qualified medical practitioners, the publication of a national Pharmacopœia, and a certain judicial function, by the exercise of which the name of any registered practitioner, "who shall be judged to have been guilty of infamous conduct in a professional respect" may be erased from the register.

"With regard to two of these duties little need be said. The registration has been made in accordance with the Act, and with an accuracy which has never been questioned. A British Pharmacopœia has been published, which has been universally acknowledged to be one of the best in existence. In this work the task has been accomplished of reconciling the different views and varying practice of the three sister kingdoms. The new British Pharmacopœia is acknowledged in England to be an improvement on the old London Pharmacopœia; in Scotland it is preferred to the Edinburgh Pharmacopœia; and in Ireland to that of Dublin.

"In regard, therefore, to those two duties of the Council, there is no reason (but rather the contrary) for proposing any change in its constitution."

A similar opinion is also expressed, although less strongly, with reference to the other duties of the Council.

The two following resolutions were passed by the Council:—

1. "That having carefully considered the objects of the Medical Act of 1858,

and the constitution of the Council appointed under the Act to carry out its objects, the Council are of opinion that for the purposes of the existing Act the present Council is essentially well constituted."

2. "That the Council are of opinion that if the Legislature should think proper to invest the Council with extended powers and fresh duties, by which the profession at large will be brought more under the direct influence of the Council, then in that case the profession at large should have more direct influence in the appointment of members of Council."

The following report was received from the Pharmacopœia Committee, and adopted by the Council:—

"The Pharmacopœia Committee appointed by the resolution of the Council, July 7, 1868, have to report that, in accordance with the directions of the Council, they caused to be printed a slip copy of certain slight typographic and minor errors, which required correction in the Pharmacopœia of 1867. These slips were inserted in the unsold copies of the Pharmacopœia, and were issued to those who had already purchased copies of the work. A reissue of the Pharmacopœia having since been required, those slight corrections have been introduced into the work, which is in all other respects identical with the copies previously issued. The Committee have engaged during the past year the services of Dr. Redwood, in watching over the progress of Pharmacy, and in making record of such corrections and additions as would hereafter facilitate the preparation of a future edition of the Pharmacopœia. In that duty he has received various suggestions from the members of the Committee, and has submitted a report to the Committee which has been reserved for future use. He has, however, been requested to bring before the Pharmaceutical Society the substance of his first two reports to this Committee, with a view to the discussion of points needing inquiry or investigation.

"The Committee have expended £30 from the sum of £50 placed at their disposal. It is recommended that the Committee be reappointed, and that the sum of £50 be again placed at their disposal for the ensuing year.

"R. Christison, *Chairman.*"

PARLIAMENTARY.

The "Adulteration of Food or Drink Act (1860) Amendment Bill" was withdrawn from the House of Commons, on the 21st ult., on the motion of Mr. Dixon. Although we believe the specific mention of drugs had been previously erased from this Bill, the question is one which still interests druggists, inasmuch as they were brought under the operation of the Act of 1860 by the Pharmacy Act of last year, and may consequently be affected by any future amendments thereon.

Petroleum Bill, *July 22nd.*—Mr. Bruce (in reply to Mr. Crawford) said it had been necessary to consolidate the Act of last Session in this Bill and that he found it impossible to carry the measure at this late period of the Session.

This is unfortunate, for although the opinion of the Government is clearly expressed in the Bill in question, that the provisions of the Petroleum Act ought not to extend to certain articles sold in small bottles properly secured, yet the law must remain as it is for another Session, and, until it is repealed, benzine collas and such preparations cannot legally be sold by unlicensed persons.

Nitro-Glycerine.—A very stringent measure has been introduced in the House of Commons to "Prohibit for a limited period the importation, and to restrict and regulate the carriage of nitro-glycerine." The time fixed for the continuance of the prohibitions is one year, to commence from the 1st of October next. The authors of the Bill evidently contemplate that in the next Session of Parliament some permanent legislation affecting this dangerous article will be agreed upon. A copy of the Bill will be found at page 90.

THE BRITISH PHARMACEUTICAL CONFERENCE.

From a circular just issued, we learn that the meeting for the present year will be held during the third week in August, at Exeter, in the College Hall, under the presidency of Mr. Daniel Hanbury, F.R.S. On Tuesday, the 17th, at 10 A.M., the President will deliver an address; the reading and discussion of papers on pharmaceutical subjects will then commence, be continued in the afternoon till 4.30, and be carried on during Wednesday; an adjournment from 12.30 till 2.0 taking place each day. On Thursday a complimentary entertainment to their visitors will be given by the chemists of Exeter. On Friday the chemists of Torquay invite members to view some points of interest in the neighbourhood and partake of luncheon.

Gentlemen intending to be present are requested to communicate with the Local Secretary, Mr. M. Husband, 95, Fore Street, Exeter, who will give all information concerning lodging and hotel accommodation, etc. Those wishing to accept the invitation to the Torquay Excursion are to write to Mr. D. Watson, 6, Lower Terrace, Torquay, not later than Friday, August 13th.

The meeting seems likely to be as successful as any of the preceding gatherings, there being, we are told, plenty of material for scientific discussion, while, evidently, there is no lack of opportunity for social communion. Exeter is a city of great antiquity, picturesquely situated on the river Exe, about eight miles from the sea. Among its objects of interest are the cathedral, remarkable for its boldness and lightness of architecture, the Guildhall and its collection of paintings, and the Albert Memorial Museum. Within easy access are the rocks and glen of Chudleigh, the Vale of Lustleigh, the river Dart, Torquay on the rocky shore of Torbay, Plymouth, the Tamar, and Mount Edgcumbe.

The objects of this Association of Pharmacologists and Chemists and Druggists are:—

(1) To increase the common stock of pharmaceutical knowledge, and

(2) To promote community of interests among those engaged in pharmacy.

In addition to the existing means of attaining these ends, a proposal is now made to issue to Members an Annual Report on the Progress of Pharmacy,—a Year-Book, which shall include notices of all pharmaceutical papers, formulæ, etc., published in the various scientific journals of Europe and America. For the annual subscription of 5*s*., each Member would thus receive a tangible *quid pro quo* in addition to the yearly volume of Proceedings. It is thought that the necessary funds for accomplishing this object can probably be obtained without making any charge in addition to the present subscription, if *five hundred new members be added to the ranks*. The Executive Committee therefore call on every chemist and druggist to offer his name for election, and on every Member to make an effort to obtain more Members.

Gentlemen desirous of joining the Conference, are invited to apply to the General Secretaries, Professor Attfield, 17, Bloomsbury Square, London, and Mr. Reynolds, Briggate, Leeds.

TRANSACTIONS

OF

THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *July 7th*, 1869,

Present—Messrs. Bourdas, Brady, Carteighe, Deane, Dymond, Evans, Haselden, Hills, Ince, Morson, Sandford, Stoddart, and Williams.

Minutes of previous meeting were read and confirmed.

The report of the Finance and House Committee was presented, showing on the General Fund account a balance in hand of £1394. 10*s*. 11*d*., and submitting for payment accounts, rent, salaries, and various items amounting to £834. 16*s*. 2*d*.

Report received and adopted—payments ordered.

On the Benevolent Fund account a balance of £316. 14*s*. 10*d*.

On the recommendation of the Benevolent Fund Committee, the sum of £5 was granted to a widow residing in London; and of £10 to the widow of a late member in Cumberland.

Mrs. Sarah Wilson, of Kendal, was approved as a candidate for an annuity.

(*The names of all approved candidates will be found on page* 2 *of the cover of this Journal.*)

The report of the Library, Museum, and Laboratory Committee was received and adopted.

A letter from the Privy Council was read, approving the appointment of the Examiners.

The Board of Examiners in London reported that during the previous month they had examined 108 Candidates, and passed 88.

The Board recommended that in future persons appointed to examine candidates in the First or Preliminary Examination in the Provinces, must have graduated at one of the Universities of the United Kingdom.

It was moved by Mr. Ince, seconded by Mr. Brady,—That a Member of the College of Preceptors, or a Pharmaceutical Chemist by Examination, might also be appointed to conduct such Examinations.

Moved by Mr. Williams, and seconded by Mr. Morson, as an Amendment,—That the appointments be confined to Graduates of the Universities and Members of the College of Preceptors.

Division taken.

For the Amendment,—Deane, Evans, Haselden, Morson, Sandford, and Williams.

Against—Bourdas, Brady, Carteighe, Dymond, Hills, Ince, and Stoddart.

The Chairman declared the original motion to have been carried.

Moved by Mr. Sandford, and seconded by Mr. Williams,—That on receiving application from a Candidate who desires to undergo the Preliminary Examination in the Provinces, the Secretary shall, if necessary, apply to the Local Secretary of the district in which the Candidate resides for information as to some person qualified to conduct such Examination.

The Board submitted two forms, one for the appointment of gentlemen to examine Candidates for the Preliminary Examination in the Provinces (those residing more than 10 miles from London), the other for the result of such examinations, which, with certain verbal alterations, were agreed to. Ordered that these regulations should be published in the ensuing number of the 'Pharmaceutical Journal.' (*Vide* p. 89.)

The Board of Examiners, Scotland, reported that during the month of June they had examined and passed eleven Candidates.

The following Professors were re-appointed for the ensuing year:—

Professor Redwood, Chemistry and Pharmacy. The Lectures to be fully illustrated by experiments and practical demonstrations.

Professor Bentley, Botany and Materia Medica.

Professor Attfield, Practical Chemistry and Director of the Laboratory.

William Augustus Tilden, B.Sc., was also re-appointed Demonstrator of Practical Chemistry.

A communication from Dr. Attfield was read setting forth the necessity, owing to the increased number of students in the Laboratory, for the engagement of additional tutorial assistance, the question was referred to the Library, Museum, and Laboratory Committee, with authority, if they thought fit, to appoint the Senior Bell Scholar of the present session to be an Assistant in the Laboratory for the ensuing session.

A letter from the editor of the 'Chemist and Druggist,' Mr. Brough, was read, requesting that a Reporter might be permitted to attend the Council meetings, for the purpose of publishing the Proceedings of the Council in the 'Chemist and Druggist.'

Whereupon it was moved by Mr. Brady, seconded by Mr. Carteighe,—That, as the universally-expressed feeling of the anniversary meeting was in favour of the publicity of all the proceedings of the Council of the Society, it is expedient that the request of the editor of the 'Chemist and Druggist' be complied with, but that it be a stipulation that any portion of the proceedings which the Council shall, by vote or otherwise, declare to be unsuited for publication shall not be reported in detail.

The following, as an Amendment was moved by Mr. Ince, and seconded by Mr. Sandford,—That this Council cannot comply with Mr. Brough's request to be allowed to send a Reporter to the Council meetings of the Pharmaceutical Society."

The Amendment having been put, the following voted:—

For,—Messrs. Bourdas, Evans, Haselden, Hills, Ince, Morson, Sandford, Stoddart, and Williams.

Against,—Messrs. Brady and Carteighe.

The Amendment was then put as a substantive motion, and carried.

Letters were read from Mr. Barnard S. Proctor and others on the operation of the Pharmacy Act with respect to "Vermin Killers," etc. Referred to the Parliamentary Committee.

Mr. Hills gave notice that at the next meeting of Council he would propose that a deputation be appointed to attend the Pharmaceutical Congress of all Nations to be held at Vienna in September next.

The following Pharmaceutical Chemists were elected—

MEMBERS.

Bates, Thomas, London.
Codd, Francis, Devonport.
Coles, John Coles, Coleshill.
Denney, Edwin James, Roughton.
Eggleton, Benjamin, Maidenhead.
Hamilton, Francis D., Chatham.
Hart, James, Manchester.
Harrison, John, Keswick.
Nicholls, Sampson, Manaccan, Helston.
Payne, Martin Henry, Bridgwater.
Sangster, Arthur, St. John's Wood.
Swinn, Charles, Birmingham.

The following Chemists and Druggists, registered under the "Pharmacy Act, 1868," were elected—

MEMBERS.

TOWN.	CHRISTIAN & SURNAME.
Birmingham	Banks, Morris, jun.
"	Horton, John Joseph.
Congleton	Cole, Frederick.
Gloucester	Curtis, Albert A.
Hambledon	Gunn, John.
Harwich	Worts, Augustine.

Hornsea	Harrison, Wm. Lovell.	Norwich	Cossey, John.
Horton	Lister, Simeon.	Pwllheli	Roberts, John Michael.
Hull	North, Walter Dudley.	Redditch	Harris, James.
Louth	Dennis, J. Woodrow.	Ripon	Stevenson, Thomas.
Nelson	Hay, David.	Swansea	Glover, Wm. Powell.

LONDON.

Andrews, Charles, 23, Leinster Terrace, Hyde Park, W.
Davidson, John C., 28, King's Square, E.C.
Fentiman, George, Upper East Smithfield.
Gibson, Robert, 10, King Street, Soho.
Jones, Frederick, 175, Kentish Town Road.
Savory, Charles Harley, 143, New Bond St.

The following were elected—

ASSOCIATES.

Atkinson, William Charles, London.
Bland, Thomas F., Stourbridge.
Bletsoe, John, London.
Grose, Nicholas Male, Wadebridge.
Howlett, Henry J., Southsea.
Mawer, Edward, Newmarket.
Procter, Samuel James, Malvern.
Ritson, John, Sunderland.
Swain, William Thomas, Selby.
Swift, William Philip, Spalding.

EXAMINATIONS IN LONDON.

June 30*th*, 1869.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Gale, Garle, and Haselden.

Eleven candidates presented themselves for Examination and passed, and were duly registered as follows:—

MAJOR (as Pharmaceutical Chemists).

Kite, John Cazeneuve, Rochester.
Havard, Benjamin, Cardigan.
Nicholls, Sampson, Falmouth.

MINOR (as Chemists and Druggists).

*Grose, Nicholas Male, Wadebridge.
*Sambrook, William, Cardigan.
*Procter, Samuel James, Malvern.
Hudson, Walter Jowett, London.
Michell, Frederick J. Curlett, Bideford.
Swire, Jabez, Skipton.
Thomas, James John, Croydon.
Woodcock, William Henry, Lincoln.

The above names are arranged in order of merit.

ADDENDUM to p. 14, *after* Hallawell, Joseph, Pendleton, *insert* Hamilton, Francis Dancey, Chatham.

July 2*nd*, 1869.

Present—Messrs. Bird, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, and Southall.

MODIFIED EXAMINATION.

Forty-five candidates presented themselves; the following thirty-four passed, and were duly registered as

CHEMISTS AND DRUGGISTS.

Annette, Alfred George, Cheltenham.
Bolam, John, Newcastle-on-Tyne.
Butcher, George Stephen, Manchester.
Charles, Richard Emment, Cardigan.
Chater, Matthew Taylor, Watford.
Cock, John, Falmouth.
Conway, John Jones, Bagillt.
Corner, Thomas Brodrick, London.
Curry, George John Symons, St. Leonards.
Davis, Henry Stutely Edwards, London.

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* Passed in honours; eligible to compete for the Prize of Books.

Done, Henry Thomas, Oldbury.
Ellidge, John Wesley, Southampton.
Feltwell, John, London.
Fenner, Edwin, Brighton.
Fox, Thomas, Leamington.
Harley, Edward Thomas, London.
Howorth, Walter Septimus, Chelmsford.
Johnstone, Henry, London.
Jones, Edwin, London.
Kelland, George Henry, Deptford.
Lear, Charles, London.
Lindsey, William Vickress, Horsham.
Mitchell, Thomas, Doncaster.
Mountain, John Joseph, Beverley.
Paine, William Henry, Canterbury.
Palmer, William Francis, Nottingham.
Pierce, John James, London.
Prosser, Thos. William, Newcastle-on-Tyne.
Robinson, James, London.
Smithson, John, Grimsby.
Strickland, Absalom Whitehouse, Bognor.
Sussum, Frank, Cambridge.
Twamley, Thomas, Tewkesbury.
West, William Curtis, Wokingham.

July 16th, 1869.

Present—Messrs. Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, Ince, and Southall.

Thirty-two Candidates presented themselves for the Major and Minor Examinations, the following twenty-nine passed, and were duly registered:—

MAJOR (as Pharmaceutical Chemists).

*Cope, John Ambrose, Sydenham.
*Swingburn, Richard Henry, Witney.
*Speechly, Edward, Bishop's Stortford.
*Calvert, Robert, Stokesley.
*Hurst, John Becket, Louth.
Clarke, Josiah, Worthing.
Clarke, James Thomas, Altrincham.
Reeler, John William, Cape Town.
Mackmurdo, Walter George, Dunmow.
Iliffe, George, Nuneaton.

MINOR (as Chemists and Druggists).

†Thompson, John Thomas, Richmond, Yks.
Equal †Hills, Walter, Ryde.
†Rimmington, Felix W. E., Bradford, Yks.
†Sandiland, R. B., Kingston-on-Thames.
Stooke, Arthur, Clevedon.
Equal Pitts, Phineas Reynolds, Hingham.
Senior, William Furber, Doncaster.
Twemlow, Richard, Stafford.
Usher, John, Newcastle-on-Tyne.
Buscall, Henry James, East Dereham.
Robson, James Crosby, Darlington.
Equal Beetham, William Childs, Cheltenham.
Heanley, Geo. Frederick, Peterborough.
White, Tom M'Call, Wigton.
Squire, Alfred Herbert, London.
Airey, George, Wigan.
Wilkinson, Thomas, Sheffield.
Equal Moore, Thomas Cooper, Barnard Castle.
Robinson, John, Hexham.

The above names are arranged in order of merit.

July 21st, 1869.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, and Haselden.

Twenty-eight Candidates presented themselves for the Major and Minor Examinations; the following nineteen passed, and were duly registered:—

MAJOR (as Pharmaceutical Chemists).

*Holmes, Walter Murton, Ramsgate.
*Beedzler, John, Peterborough.
*Chilwell, Joseph, Newcastle-on-Tyne.
Rooke, James Henry, Swansea.
Manby, Walter Edward, Southampton.
Beasley, Frederick, Maidstone.
Holton, John Henry, Lincoln.
Monkhouse, Joshua, Gainsborough.

The above names are arranged in order of merit.

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* Passed in honours; eligible to compete for the Pereira Medal.
† Passed in honours; eligible to compete for the Prize of Books.

MINOR (as Chemists and Druggists).

*Jones, John, Neath.
*Hemingway, Walter, London.
*Hartt, Charles Henry, Torquay.
*Holmes, Jasper Clement, Southampton.
Allen, Benjamin, Birmingham.

Equal { Gimblett, Washington, Bristol.
Hutchinson, George B., Brighton.
Talbot, Thomas Henry, Norwood.
Ransford, William, Penzance.
Smith, Walter Henry, London.
Riggall, Francis Henry, Horncastle.

The above names are arranged in order of merit.

REGISTERED APPRENTICES AND STUDENTS.

NAME.		ADDRESS.
Aldred, Robert		Ilkeston.
Allison, Reuben		Glantwrch, Swansea.
Baker, Samuel	Mr. Baker	Chichester.
Baker, William Ritchie		Hounslow.
Balkwill, Joseph		Kingsbridge.
Barron, William	Mr. Smith	Leamington.
Bennett, John Henry	Mr. Bennett	Cheltenham.
Bishop, Henry		Wisbeach.
Brown, George	Mr. Baker	Retford.
Brown, James	Mr. Brown	Ripon.
Bycroft, John Henry	Mr. Hewson	Louth.
Cadman, Daniel Charles	Mr. Betty	London.
Carter, Arthur		London.
Cole, Charles Campion	Coventry Provident Dispensary	Coventry.
Cole, Edward Henry	Mr. Iredale	Leeds.
Crompton, Alfred	Mr. Baynes	Hull.
Cullen, Jeffery	Messrs. Argles, Son, & Stonham	Maidstone.
Darby, Samuel Aldred	Mr. Ridley	Reading.
David, John	Mr. Jones	Newport, Monmouth.
Davies, Frank Henry	Mr. Pasmore	Portsmouth.
Davies, Robert Higgins	Mr. Edwards	Dartford.
Davies, William	Mr. Davies	Llandilo.
Evison, William	Mr. Griffin	Louth.
Fowler, James	Mr. Pullin	Barton-under-Needwood.
Gilkes, Malin D'Oyley	Mr. Robinson	Leominster.
Gilkes, Norton Gilbert	Mr. Robinson	Leominster.
Gorton, William David	Mr. Pollexfen	Horncastle.
Goskar, James John	Mr. Pain	Cambridge.
Gould, Eli	Messrs. Dunn and Bradley	Dudley.
Gradidge, William	Mr. Gradidge	Andover.
Hains, Francis George	Mr. Smith	Leamington.
Halse, Thomas	Mr. Norrish	Tiverton.
Hannah, Charles	Mrs. Williams	Abergele.
Holmes, Nathaniel W.	Mr. Gamble	Grantham.
Homer, F. G.	Mr. Horton	Birmingham.
Hopkinson, Thomas	Mr. Hopkinson	Grantham.
Hughes, William Lloyd	Mr. Thomas	Llandyssil.
Johnson, William Henry	Messrs. Iliffe and Son	Nuneaton.
Jones, Moses	Mr. Alewood	Swansea.
Lacey, Thomas Samuel	Mr. Wilson	Reading.
Lamble, John	Mr. Troake	Kingsbridge.
Lance, Arthur James	Mr. Witlock	Southampton.
Lewis, John	Mr. Parish	Oldbury.
Lines, George	Mr. Lines	Hertford.
Little, Arthur Nicholas	Mr. Pitman	Bristol.

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* Passed in honours; eligible to compete for the Prize of Books.

Name.	Address.	
Littlewood, Joshua Smeaton	Messrs. Lofthouse and Saltmer	Hull.
Longley, John William	Mr. Rogerson	Bradford, Yorks.
Lovegrove, George Elliott	Mr. Holden	York.
M'Kie, John	Mr. Ewing	Dumfries.
M'Neil, James Norton	Mr. Wright	Macclesfield.
Mason, Philip Henry	Mr. Sutton	Norwich.
Milton, Harry	Mr. Milton	Exeter.
Mitchell, George	Mr. Agnew	Liverpool.
Ness, Thomas Henry	Messrs. Burn and Scruton	Boston.
Nuthall, Edwin	Mr. Sutton	Norwich.
Oliver, Frederick Bailey	Mr. Pepper	London.
Ordish, Thomas	Mr. Bowker	Manchester.
Pavitt, William Thomas	Mr. Speechly	Bishop's Stortford.
Ransom, Thomas	Mr. Shadford	Spalding.
Rendall, John Murley	Mr. Cheverton	Tunbridge Wells.
Richardson, Charles Sidney	Mr. Shrimpton	Wells.
Rogers, William	Mr. Wilson	Southsea.
Russell, George H.	Mr. Harvey	Frome.
Sainsbury, Everton	Mr. Sainsbury	London.
Simpson, John	Mr. Martin	Lewes.
Sisson, Hayton	Mr. Baynes	Hull.
Smale, Charles	Mr. Rees	Totnes.
Stephenson, George H.	Mr. Metcalfe	Hull.
Thomas, Thomas Rees	Mr. Morgan	Llandovery.
Tilson, James		Tydd Gote.
Tomlin, Albert Roberts	Mr. Billington	Ramsey.
Walker, William	Mr. Lowndes	Stockport.
Williams, John, Havard		London.
Williams, William Griffith	Mrs. Williams	Abergele.
Worsdell, Oswald	Messrs. Thompson & Capper	Liverpool.
Wood, Alfred	Mr. Radley	Sheffield.
Woodward, W. Melbourne	Mr. Dalrymple	Leicester.
Wright, Samuel Prince	Mr. Parish	Oldbury.

July 23rd, 1869.

Present—Messrs. Carteighe, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, and Southall.

MODIFIED EXAMINATION.

Forty-nine candidates presented themselves; the following forty-three passed, and were duly registered as

CHEMISTS AND DRUGGISTS.

Alexander, John, Liverpool.
Barge, John, Plymouth.
Barker, Frederick Griffiths, Dudley.
Barker, Robert, Mold.
Barrett, William Henry, Brigg.
Bartleet, John, Shirley.
Bullock, Alfred Hugh, Manchester.
Burgess, James Stanley, Manchester.
Clift, Martin Luther, Derby.
Collins, Henry George, Windsor.
Dibble, John William, Bristol.
Elliott, Robert Taylor, London.
Ellis, Albert, Bracknell.
Entwisle, John Bell, Liverpool.
Fairweather, Alexander, Woolwich.
Fisher, Catherine Hodgson, Botcherby, near Carlisle.
Fletcher, Francis Bagshaw, East Retford.
Furnival, John Daniel, Bury, Lancashire.
Gallimore, Thomas, Longton.
Grimditch, William James, Hove.
Heal, George Richard, Bristol.
Hick, John, Looe.
Hurst, James, Oldham.
Judd, Henry, Coventry.
Judd, William, Manchester.

King, James, London.
Lancaster, John Bulgin Snow, Norwood.
Lawrance, Edmund, Welwyn.
Lawrence, Christopher, London.
Mayo, Robert William, Chelmsford.
Mitchell, John, London.
Owen, Charles Richard, London.
Parker, John Marshall, Lincoln.
Pettinger, Elmer, London.
Powell, John, Newbury.
Radcliffe, James, Oldham.
Rees, Richard Posthumous, Carmarthen.
Scholes, Frederick Darfield, Sheffield.
Shemmonds, John, Coventry.
Waterworth, Alfred, Preston.
Willis, William, Northampton.
Wilson, John Jackson, Bolton.
Woodward, Edward, West Bromwich.

EXAMINATION IN EDINBURGH,

July 13*th*, 1869.

MINOR (registered as Chemists and Druggists).

*Gorrie, John P., Edinburgh.
Reid, Andrew Dickson, South Shields.

REGISTERED APPRENTICES AND STUDENTS.

Alexander, Hugh D., Edinburgh.
Anderson, Alexander, Newcastle.
Cowan, John, Dumfries.
Harcus, John, Newcastle.
Hamilton, James, Edinburgh.
Henry, James Hay, Macduff.
Smith, Louis, Forfar.
Tait, Alexander, Moffat.
West, James Cuming, Banff.

MODIFIED EXAMINATION.

Eight candidates presented themselves; the following six passed, and were duly registered as

CHEMISTS AND DRUGGISTS.

Bertie, Jonathan, Aberdeen.
Gibson, Samuel, Liverpool.
Nicol, William, Edinburgh.
Ritchie, David, Falkirk.
Ross, William, Galashiels.
Shelmerdine, Henry, New Brighton.

PROVINCIAL TRANSACTIONS.

ABERDEEN ASSOCIATION OF ASSISTANT CHEMISTS AND DRUGGISTS.

The half-yearly general meeting of the above Association was held on the 13th of May in the St. Nicholas Lane Hall; Mr. James Thom, President, presiding.

The Secretary read a report of the past six months' proceedings, which showed the Association to be in a very progressive state; not only as regards numerical strength, but also as regards the number and character of the papers given by members.

The following gentlemen were then elected as office-bearers for the ensuing six months:—President, Mr. James Thom; Vice-President, Mr. J. Bertie; Secretary and Treasurer, Mr. Wm. Donald; Committee, Messrs. Carroll, Gordon, Auchinachie, Hosie, Mathieson, and Cheyne.

ORIGINAL AND EXTRACTED ARTICLES.

ON THE VALUE OF *PRECIS*, AS APPLIED TO "PROVINCIAL TRANSACTIONS."

BY A PROVINCIAL.

The readers of this Journal are greatly indebted to the author of the erudite paper on "*precis*," which appeared in the last number. Undoubtedly, the reports of Provincial Transactions too often present a dreary level of monotony. But since, fortunately, one is not compelled to read them, and since not one man in a thousand (out of their own district) probably *does* read them, there is not much harm done;—only a waste of so much paper and printers' ink. But, unfortunately, neither my friends, in conclave assembled, nor myself, acting as secretary for them, feel quite able to comprehend this learned paper;—still less do we find ourselves capable of divining its precise object. For, since, (as we are informed,) it requires two years' practice to acquire the art of precis-writing, it is not probable that many of us struggling provincials will be able to devote the requisite time to the purpose; or, even if we could secure the time, many among us may be wilful enough to fancy (so perverse is human nature) that it might be employed in some pursuit more interesting, or more useful, than even the acquisition of "*precis.*" We are all agreed that it was very kind of our well-meaning adviser to take so much trouble about us poor provincials, and we are far from wishing to appear ungracious; but we ask ourselves blankly, *Cui bono?* of what possible use to us is this good advice? since not one man in a hundred will ever be able to avail himself of it.

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* Passed in honours; eligible to compete for the Prize of Books.

Sighing, then, regretfully, at the little chance that any one of us will have of ever attaining to the glories of precis-writing, we proceed to inquire why, and whose fault it is that, we should be so puzzled over this learned paper. Here one of our number exclaims exultingly, "Eureka!" and puts forward a suggestion,—a suggestion for the sagacity of which we, each of us, secretly envy him,—that, most probably, this paper upon "*precis*" practises what it preaches, and is itself a "*precis;*" and that this circumstance accounts for its incomprehensibility! I myself, however, do not altogether acquiesce in this view. Being naturally somewhat humble-minded, I am inclined to attribute our want of comprehension rather to our own defective training, than to any over-shooting the mark by our didactic teacher. Still, I certainly do wish that he would descend from his pedestal, and condescend to address us, his humbler brethren, on our own level, and in our own vernacular; and, if it would not make any very great difference to him, and would not derogate too much from his dignity, that,—just for this once,—he would not mind calling a spade a spade.

Here, again, my sagacious friend interposes:—"You mean to wish that he would call an abstract an abstract, instead of calling it a '*precis;*' just as you and I would call an extract an extract, rather than call it a quintessence." Now, it so happens, that I did not really mean anything of the kind; but my too perspicacious friend, measuring other men's chaff in his own corn-bushel, gives me credit for greater acumen than I, who am generally reckoned a rather dull man, ever presumed to lay claim to. But, with a mild disclaimer, I let it pass.

A third (and last) time, our irrepressible friend comes forward with a suggestion; viz. that perhaps, after all, the writer did not really mean "*precis;*" but that this diplomatic, official, and (may I venture to say it?) rather priggish-looking little word has, like a will o' the wisp, somehow led him astray. And our friend supports his opinion by calling our attention to the author's references to such topics as 'wording,' 'sentences,' 'paragraphs,' 'style,' etc., none of which, as he assures us, have anything whatever to do with "*precis,*" which concerns itself with the matter only, and not at all with the language, or style,—good or indifferent,—in which this matter happens to be conveyed. For my part, I do not pretend to understand these high subjects. When Doctors disagree, I stand respectfully aside, and await the issue.

It is true that, hitherto, I had always believed that "*precis*" applied to subjects which, either formally or virtually, were of an argumentative character. But, "Live and Learn." I am now instructed that it is equally applicable to narrative, or to descriptive subjects, such as the reports of meetings, of dinners, of presentations, etc.; and to speeches, whether laudatory, retrospective, or merely post-prandial. Would the writer kindly instruct us, some of whom will probably become hereafter provincial secretaries, how we are to set about making "*precis*" of such subjects? If he had any clear aim in writing his article, to convey this information should have been his aim. When any chain of reasoning is involved, I think some of us might contrive to manage some kind of a "*precis*," even without two years' training. But how to *precis* reports of proceedings, of conventional speeches, or of descriptions of new chemicals, new processes, or new instruments, altogether surpasses our comprehension.

If, for instance, Mr. Ince will have the kindness,—and the task need not occupy him for more than an hour,—to oblige us with a "*precis*" (which shall be neither an abstract nor an epitome) of the Edinburgh proceedings (pp. 19 to 25, July number), to serve at once as an example, and an illustration of his meaning, he will render a substantial service, alike to Provincial secretaries, to readers of the Journal, to its official Editors, and finally, even to himself; inasmuch as he will then have extricated his article from the haze of unrealism, impracticality, and aimlessness in which it lies at present hopelessly enveloped.

At this point, "*Hic labor!—hoc opus est!*" comments my impetuous friend, and forthwith vanishes. I hope his quotation is pertinent; for, now that he has gone, I am sure I should not know where to look for a better one.

APPARATUS FOR PREPARING NITROUS OXIDE GAS.

BY J. T. PORTER.

Since the introduction to the medical profession of nitrous oxide gas as an anæsthetic for operations in dentistry, its administration has received considerable attention from surgeons and dentists, and has also occupied the study of physiologists. Many experiments have been made to effect an easy and safe process for its production in a pure state. It may scarcely be necessary to observe that although nitrous oxide can be produced by acting upon zinc with a mixture of dilute nitric and sulphuric acids, it may conveniently and is more commonly obtained in a purer state by heating nitrate of ammonia to a temperature of about 400° Fahr., when the salt is decomposed into water, and a gas composed of two of nitrogen and one of oxygen combining to form two volumes of nitrous oxide (N_2O) or laughing gas. In this way it was discovered by Priestley in 1776. Its properties and stimulating effects produced by its inhalation were fully investigated by Sir H. Davy in 1800. However, I shall not give its history, as it has already appeared in this Journal, Vols. IX. and X., also in the Journal of the Transactions of the Odontological, Medico-Chirurgical, and other Societies. The following is an account of an improved method of obtaining it in a pure state, together with a description of an apparatus contrived to regulate the heat in its preparation.

From the first use of this gas in England for anæsthetic purposes, rather more than a year since, namely, April, 1868, it has been my duty almost daily to make large quantities of it for the dental and other hospitals, and unavoidably many accidents have occurred, resulting in devising as many improvements, both in manipulation and apparatus, to prevent their recurrence. Having at last arrived at a period when breakages arising from over-heat or pressure are rare, together with a greater reliance in the purity of the gas, I now bring to the notice of chemists and dentists the result of my experience in the form of the following directions:—

In preparing nitrous oxide from comparatively pure nitrate of ammonia there are three important points to be observed, viz.

First. To keep the temperature steady, such as will decompose the salt into water and nitrous oxide only.

Secondly. To free the gas from impurities by well washing through proper solutions, and

Thirdly. To be careful in expelling the air from the flask and wash bottles before collecting the gas.

The necessary articles are—

Pure nitrate of ammonia.

A good Bohemian glass flask of suitable size and shape.

Four wash-bottles and tubing.

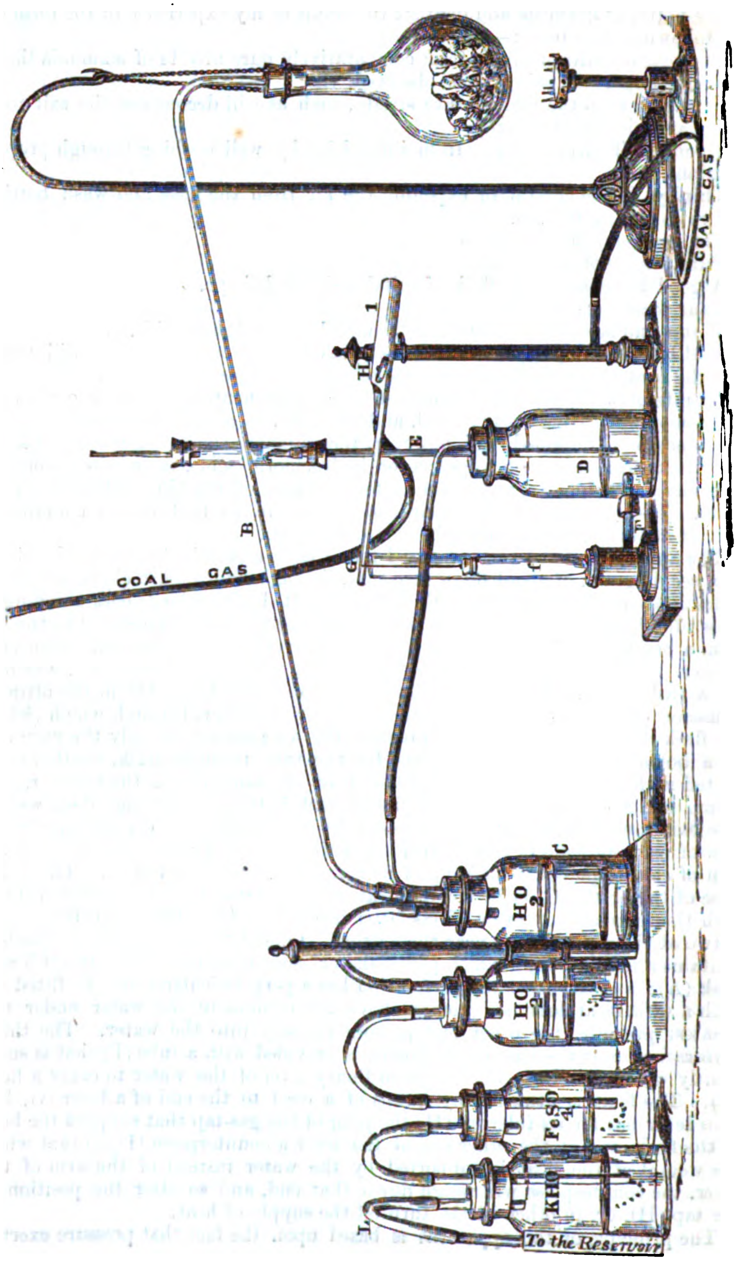
Water and solutions of caustic potash, and protosulphate of iron.

And lastly a lamp (gas or otherwise) having some appliance that will regulate the heat in proportion to the rate at which the gas is liberated.

Nitrate of ammonia is made almost entirely by neutralizing pure carbonate of ammonia with pure nitric acid, and in this way a pure and comparatively cheap article is obtained. If, however, the ammonia contains any chlorides, or the nitric acid traces of sulphuric or hydrochloric acids, the salt will contain chlorides and sulphates, and when heated will give off chlorine and nitric oxide gases. These are the only impurities that occur, so that a salt containing neither of these may invariably be considered pure.

The apparatus that by experience I found most convenient consists of a flask (A), see diagram, of about 60 oz. capacity, having a wide mouth (1½ inch inside) to facilitate the introduction of the salt, and fitted with a large cork carrying a glass tube ⅜ inch wide. This flask is suspended by a chain or wire fixed to the lip from a bracket or hook, as may be convenient, over the naked flame of a Bunsen's burner. A long bent tube (B) connects the flask with the first bottle (C), which is not a wash-bottle, but simply a receiver for the condensed water from the nitrate, a means of communication to the thermal moderator, through which (when the flask cools at the end of the process) the air passes to supply the vacuum. This bottle has three openings, one for the tube from the flask, another connected with the first wash-bottle, which is of the same size as the receiver, viz. 40 oz., and is constructed as an ordinary wash-bottle, containing 16 oz. water. The exit tube of this bottle is connected to a second bottle, containing a solution of protosulphate of iron (1 to 7), and this to a third containing 16 oz. solution of caustic potash (consisting of 8 oz. liq. pot. and 8 oz. water). The third tube of the bottle (C) is in communication by means of an india-rubber tube with the thermal moderator. This latter is a bottle (D) with three perforations, —two at the top, and one near the bottom. One of the perforations in the top contains a tube through which passes the pressure from the first bottle (C) and flask (A); and the other top perforation has a perpendicular tube (E) fitted up with a whistle at least six inches above the column of the water under the greatest pressure, the other end passing midway into the water. The third perforation, near the base of the bottle, is provided with a tube (F) that is sufficiently widened a little above the ordinary level of the water to carry a float (*f*). The float is attached by means of a cord to the end of a lever (G, H). This lever has for its fulcrum (H) the plug of the gas-tap that supplies the heat to the flask, and at the other end of the lever a counterpoise (I), so that when the weight of the float is supported by the water instead of the arm of the lever, the counterpoise will weigh down that end, and so alter the position of the tap (H), or, in other words, turn off the supply of heat.

The principle of this apparatus is based upon the fact that pressure exerted


COAL GAS
1
H
E
D
B
G
F
COAL GAS
C
HO_2
HO_2
$FeSO_4$
KHO
L
To the Reservoir

upon a column of water supports the same at various heights in proportion to its force; and the idea is brought into action by having a float in this column attached to a lever which has for its fulcrum the plug of the gas-tap that supplies the heat.

Its working is as follows:—When the gas generated in the flask by the heat of the burner (X) increases so as to produce a pressure within (C), beyond that escaping by the wash-bottles, and, therefore, upon the surface of the fluid in (D), it causes the latter to rise in the tube (F), and, in proportion to the pressure, so will be the height thereof, and also of the float (*f*). Now, as the float is attached to the end of the lever (G), and is counterpoised by the weight (I); and since the lever is essentially the gas-tap, it follows that the rising and falling of the column in (F) will, by its connection, raise or lower the arm (G, H), or, in other words, turn off or on the supply of heat; so that if the gas is liberated too quickly because of the excess of heat, it exerts a pressure, raising the column and turning off the heat, when the evolution of the gas and pressure will diminish, and the heat be turned on again. And thus it moves up and down until it attains a position where the pressure and heat are balanced, and there it will remain four or six hours, or as long as the nitrate of ammonia lasts. The arm of the lever is prevented from quite extinguishing the gas by a stop, so that when the pressure diminishes, the gas may re-kindle, which is a great advantage. If by any means the exit of the gas is closed (as by the doubling of the india-rubber tube, the bag being full), or should the gas be generated too fast, from the lamp being too close, or any such cause that would increase the pressure, then the column of water would gradually rise, at first turning the tap off to its stop, and then force so much water into the pressure-tube as to diminish the height of the water in the bottle below the orifice of the tube (E), when the gas rushes up, sounding the whistle on the top, to give an alarm that something is amiss.

Then, taking a general view, we have an apparatus that will, when the gas is going too slow, turn on its own heat, or, when going too fast, turn it off, and, should the pressure become dangerous, will indicate the same by sounding a whistle. When the nitrate is exhausted, and the heat turned off, the vacuum caused in the flask is supplied by air being drawn in through the whistle, passing into (C) and up the tube (B) into the flask (A), so preventing any accident, which often happens when the tube from the retort is under water.

This apparatus, although it may be considered as an addition to the ordinary arrangement, does indeed perform the most important function of them all, inasmuch as it prevents so many disastrous effects that result from the supply of heat not being properly regulated, such as the production of higher compounds of nitrogen, as nitric oxide, nitrous anhydride, and even nitric peroxide, together with free nitrogen from excess of heat, as well as the bubbling over of the fused nitrate, that sometimes solidifies in the tube of the flask, causing the latter to burst, which is often attended with serious injury to the operator, as it may contain three or four pounds of fused nitrate of ammonia at a temperature near to 400° Fahr. It also has great advantages over others, in that there is no need for disconnecting the tube of the flask, because any vacuum formed in the latter is supplied with air drawn through the whistle into the bottle (C) and flask; it also saves the trouble in moving the gas and watching the whole time it is being made, as well as ensures the purity of the gas (*i. e.* if the nitrate of ammonia be pure). With an apparatus of this kind and four pounds of nitrate of ammonia, 100 gallons of gas have been produced in four hours, without any more attention than that of starting the operation.

LINIMENTUM ACONITI AND LINIMENTUM BELLADONNÆ.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—In answer to the questions asked in the July number by Mr. Gissing, of Wakefield, I beg to state, that in the preparation of aconite and belladonna liniments of the British Pharmacopœia, sixteen parts by weight of dry crushed aconite or belladonna roots require, to moisten and macerate sufficiently for percolation, sixteen parts by measure of rectified spirit; and to obtain the product by displacement will take at least twelve parts by measure more.

The above statement is based upon six experiments carefully made, the quantity being about one gallon each time.

Other experiments have been made to see how much spirit can be recovered by pressing the marc after exhausting, details of which may be tabulated as follows:—

Date.	Root.	Spirit Used.	Product.	Spirit Recovered.	Loss.
2 Mo. 21.67	160 oz.	260 fl. oz.	160 oz.	70 oz.	30 oz. fl.
10 „ 16.67*	160 „	280 „	160 „	100 „	20 „
4 „ 14.68	160 „	290 „	160 „	103 „	27 „
6 „ 2.68	160 „	270 „	160 „	82 „	28 „
7 „ 7.68	144 „	194 „	144 „	38 „	12 „
10 „ 22.68	160 „	300 „	160 „	122 „	18 „
Total .	944 oz.	1594.	944.	515.	135.

By converting the above numbers into decimals of 1 lb. we shall have—

·94	1·594	·944	·515	·135
15 oz.	26 oz.	15 oz.	8 oz.	2 oz. fl.

So that 10 oz. of the root will take rectified spirit, thus—

16 oz.	27½ oz. $\left.\right\}\begin{matrix}16\\11\frac{1}{2}\end{matrix}$	16 oz. fl.	9 oz.	2½ oz.

Trusting these remarks may be useful,

I am, yours obediently,
J. T. Porter.

Laboratory, 338, *Oxford Street, July 7th.*

NOTES ON SOME NEW OR LITTLE-KNOWN VEGETABLE PRODUCTS.

BY JAMES COLLINS,

CURATOR OF THE SOCIETY'S MUSEUM.

Chuquiragua (*Chuquiraga insignis*, Humb. et Bonpl.).—This prickly plant, the leaves and young shoots of which are very highly prized at the commencement of any kind of fever by the Indians of Columbia, I noticed in London last summer, a bale of it having been sent to Messrs. Im Thurn and Co., described as "a medicinal grass from Guayaquil." It seems to have been first offered for sale in this country in 1864. This plant has already attracted the attention of writers on Materia Medica. Mérat and De Lens* notice it as being "a plant of Upper Peru employed at Payta in the form of an infusion against fevers."

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* 'Dictionnaire de Matière Médicale,' tome ii. p. 275.

Dr. J. Léon Soubeiran, in a note read before the Société de Pharmacie de Paris, after noticing its habitat, observes:—

> "The Indians say that the decoction or infusion of this plant, which is very bitter, is of great power in fevers; especially such as are intermittent or bilious . . . . In the towns alcoholic tinctures, syrups, etc., prepared from this plant, are used by the physicians. Drs. Jameson and Gandara, of Quito, have employed it in numerous cases of fever with great success."[*]

The fullest account I have met with respecting this plant is in a letter by Dr. Raphael Barahona (Physician to the Medical Hospital and Professor of Physiology in the University of Quito), quoted by Professor Jameson in a paper on the *Compositæ* of the Andes.[†] The paper is too long to repeat here, but Dr. Barahona gives, as the result of lengthened public and private practice, a very high character of the medical value of this plant. The Chuquiragua is a very abundant plant in South America, and grows up to the snow line on the Andean Mountains, its small glossy leaves of about ¼ inch long, and its large, bright yellow composite flowers, rendering it a pretty object, which would look well in European gardens. The whole of the plant is very bitter, but the leaves seem to be the most powerful. The plant, at all events, deserves a chemical analysis. My specimens appear to be the var. *microphylla* of *Chuquiraga insignis*.

STRIATED IPECACUANHA (*Psychotria emetica*, Mutis).—Within the last few months, this kind of ipecacuanha has made its appearance in our markets, a few packages of it having been shipped from Bogotá, in New Granada. It is not necessary here to give any detailed description of its characteristics, as it is easily distinguished from the roots of the true ipecacuanha (*Cephaëlis Ipecacuanha*, Richard) by being longitudinally striated, and having circular constrictions or intersections at various distances; and from those of *Richardsonia scabra*, DC., by not having the jointed or undulated appearance noticeable in that species. However, the excellent figures of Dr. Pereira[‡] render it an easy matter to detect the differences between them. It is of no commercial value unless sold at a much lower price than the *Cephaëlis*, or in the event of the supply of the latter falling short of the demand. It has been introduced with success by M. Hardy in Algeria.[§] According to the published analysis of Pelletier it contains 9 per cent. of emetine, but this seems too high. Professor Attfield, however, has examined it recently, and will no doubt communicate the result before long.

VEGETABLE TALLOW SEEDS from Bombay (*Bassia latifolia*, Roxb.).—Under the name of "Vegetable Tallow Seeds," there are at present eight or nine bags of what I find to be the cotyledons of the *B. latifolia*, Roxb., and from which a solid fat is extracted in large quantities in India. This tree is known in India under the names of 'mahwah' (Eng.), 'poounum' (Mal.), 'ipie' (Tel.), 'moola' (Hind.), 'mahooa' (Beng.), and many others, and is exceeding common and much valued, growing wild in many places, and also largely cultivated near villages, the flowers yielding by distillation a spirit largely consumed by the natives; and according to Dr. Gibson,[‖] no greater punishment can be threatened to the Bheel, or forest population, than to cut down their Bassia trees. In India the oil is used for various domestic purposes, in frying cakes by the poorer classes, but universally used for oil lamps, for which it is well adapted. It is also largely used for soap-making, and a paper is given by Mr. Hawkes on the process in the 'Madras Journal of Literature and Science' (N. S. vol. iii. p. 54). The oil is extracted by pressure, the proportion yielded by the native process being stated as one-half the weight of the seeds used.* In the 'Pharmacopœia of India,' p. 130, there is a notice of this plant and its allied species, *B. longifolia*, Linn. as follows:—

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[*] 'Journal de Pharmacie et de Chimie,' October, 1868, p. 303.

[†] Trans. Bot. Soc. Edin. vol. ix. p. 115, March, 1867.

[‡] Mat. Med. vol. ii. pt. 2, p. 66, 1857.

[§] 'La Production Animale et Végétale,' p. 344 (La Société Impériale d'Acclimatation), Paris, 1867.

[‖] Hooker's Journ. Bot. 1853, p. 90.

> "These two trees, common in most parts of India, yield . . . a fixed concrete oil and spirit. The oil is generally thick and coarse, and soon becomes rancid on exposure, and hence of little service in Pharmacy except in the manufacture of soap, for which purpose it seems well adapted. It retains its solid form under 95° F. . . . The cake left after the expression of the oil (Ilúpai púnak, Tam.) is employed as an emetic. Some cases of poisoning by stramonium in which it was so employed are given by Dr. Shortt (Madras Quart. Med. Journ. vi. 286). It appears to act efficiently in this character."

These fatty cotyledons may possibly prove of great use in the manufacture of soap, candles, etc., as this tree is widely distributed together with *B. longifolia*, Linn. Other species yield a similar substance, that of *B. butyracea*, Roxb. being of a superior kind, and judging from recent specimens, the old historic Shea butter of Mungo Park (*B. Parkii*, Don), from the West Coast of Africa, seems equally good.

NAG-KASSAR (*Cinnamomum iners*, Nees).—In November last a parcel of fruits from Calcutta described under this name made their appearance in London. Nag-Kassar, with various modifications in the orthography as Naghas, Naghassarium, Nagsara, Naghesur, Nagacesara (which latter, according to Sir W. Jones, is the correct†), and many others, is generally understood to refer to the aromatic flower-buds of two plants, viz. *Mesua ferrea*, Linn., and *Calysaccion longifolium*, Wight, as a reference to the articles of Dr. Pereira and other writers in the 'Pharmaceutical Journal' will prove. They are used on account of their fragrance, the Burmese grandees stuffing their pillows with them; and mixed with other aromatics, are used in making perfumed ointment. In the bazaars of India these dried flower-buds are sold as a mild stimulant, and also for dyeing silk. Having, however, strong doubts of the identity of my specimens with the fruits of either of these plants, I compared them with published figures and herbarium specimens, and found them to be totally distinct. They agree, however, with figures of *Cinnamomum iners*, Nees, being perfectly represented in Wight's 'Icones' (tab. 122 *bis*), from a specimen named by Nees himself. The name spelt Nakaeserie is also applied to *Laurus Cassia*. This is a good illustration of the value to be set on native names. Though Dr. Seemann, who has paid great attention to vernacular nomenclature, observes justly‡ "that the medical man, the chemist, or traveller, by simply asking the native name would instantly have the scientific appellation, and that they are less fallible than generally supposed,"—yet it is not sufficient to find in any book, however high an authority it may be, the native name appended to a scientific one, to identify them; it is only a means to an end, not the *end* of inquiry itself. Native names are exceedingly valuable, but are frequently misapplied by traders and others, and they point out generic affinities rather than specific distinctions. Though as yet these fruits do not seem to be of any use, yet the tree itself possesses interest apart from this question as being one of the sources of Cassia buds and Cassia bark, and interesting remarks on both these substances are to be found in the 'Pharmacopœia of India,' pp. 196 and 460.

NATAL INK GALLS.—Under this name a parcel was recently received from Natal, and offered up for public sale. These I found to be not galls, but Euphorbiaceous fruits! Accompanying them were also a few bottles of ink of a good quality made from them. Some of the same fruits were sent over by Mr. R. W. Plant in 1855 under the name of *Utumbu*, who in a letter respecting them says, "The outer covering contains tannin of great strength, and excellent ink is made from them. The kernels yield an oil, but of its quality or quantity I cannot speak." The seeds are very much like those of the castor-oil plant. As to the plant producing these fruits, there is some difficulty in determining. Mr. Plant's specimens (and with which mine are perfectly identical) were named by George Bentham, Esq., F.L.S., and the late Dr. Lindley, as probably those of *Pycnocoma macrophylla* (Bentham in Hooker's 'Niger Flora,' p. 508). Mr. Hanbury, to whom I am indebted on this as on many other occasions, kindly forwarded specimens to Dr. Müller, the Curator of De Candolle's Herbarium at Geneva, who on the receipt of them thus writes:—

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* 'Bengal Catalogue,' Exhib. 1862, p. 84 (Calcutta, 1862).

† 'Asiatick Researches,' iv. p. 295. 1795.

‡ 'Popular Nomenclature of the American Flora,' Hanover, 1851 (Preface).

> The fruits you have addressed to me belong to the genus *Excæcaria*, probably *E. reticulata* (Müller, auct. Euphorb. DC. Prodr. p. 1213), of which I never saw the fruit. The two prominences on the back of each carpella (6 on each fruit), the 3-partite calyx, the fleshy capsule scarcely gives place to any doubt on the determination of the genus, in so far as it is possible to determine a genus in this difficult family on the examination of the fruits only.

I trust before long to obtain specimens of the tree, whereby their origin may be finally determined. As to the commercial value of these fruits, I have not been able to ascertain.

PALMETE (*Prionium Palmita*, E. Meyer).—This large palm-like reed, which is found in great profusion in the streams of Southern Africa, has more than once been sent to this country with a view to its utilization. Last year I noticed a large quantity of this substance in one of the London Docks. It has a thick trunk-like stem, sometimes 8 or 10 feet long, and 6 to 8 inches in diameter. The leaves, which in commercial specimens are generally absent or much mutilated, are serrated, very broad and channel, and leathery in texture. The flowers spring in the form of a much-branched panicle from the centre of them. It was first discovered by Thunberg (Prodr. 66), who named it *Juncus serratus*, a name under which it often passes. Lichtenstein (Reise, ii. 256) mentions it under the name of *Acorus Palmita*. The fullest account, however, we owe to Burchell,* the enterprising African traveller, who speaks of it occurring in such abundance as to block up the rivers, rendering them dangerous to ford. Their appearance in the streams is very remarkable.

> The stems are of the thickness of a man's arm, black, and of a very tough and spongy nature, generally simple, though not rarely divided into two or three branches. They rise up from the bottom, not often in an upright posture, but inclined by the force of the current. They have much the growth of Dragon-trees (*Dracæna*), or of some Palms, from which latter resemblance they have obtained their name.

The bases of the leaves after the decay of the parenchyma and epidermis yield a coarse and abundant reticulated fibre which would possibly be of use in paper-making. In the excellent museum at Kew there is an interesting collection showing its application, but it will probably share the fate of many other substances till some manufacturer more bold or ingenious than his fellows turns it to good account.

TELFAIRIA PEDATA (Hooker).—A small parcel of the seeds of this plant (*Joliffia Africana*, DC.) appeared in the markets recently, having been brought from Abyssinia. They are flattened on either side, roundish, about an inch and a half in diameter, and having a very marked reticulated testa, of a yellowish colour. The seeds, when fresh, are said to be very agreeable eating, tasting like almonds. They yield by expression a very fine oil in abundance. The pulp of the fruit is exceedingly bitter.

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* Burchell's 'Travels in the Interior of Africa,' quoted in Hooker's Journ. Bot. 1857, p. 173, and Curtis's Bot. Mag. 5722, with figures.

Efforts have been made to introduce the plant in India, but as yet, I believe, without success. The plant is well worthy of notice, and if a quantity of the seeds were forwarded to this country, they would, in all probability, meet with a fair trial. It is also found in other parts of Africa and in the Mauritius.

GNIDIA BARK (*Gnidia nodifolia?*).—This bark, which has much the appearance of that of Mezereum, I have met with recently in small samples, and also mixed with *Prionium Palmita*, from S. Africa, where it grows in abundance. It is very fibrous, and might possibly prove of use in paper-making if a sufficient quantity and at a cheap rate could be supplied. However, paper-manufacturers are best able to judge in this matter. In the Kew museum there are samples from Ceylon of rough paper, and also rope fit for tying up bale goods made from another species of the same genus.

IRON-SUGAR, OR "SOLUBLE PEROXIDE OF IRON."

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—As I am responsible for the paragraph on Iron-Sugar, or "So-called Soluble Peroxide of Iron," which appeared in the May number (p. 647) of your Journal, and as Dr. Smith in your last issue directly contradicts one of the statements in that paragraph, perhaps I may be allowed to say a few words in my own justification. Some time in April, I met with a bottle of this preparation, which had been purchased by a house in London for the supply of a customer in the country, and as *Sucre Ferrugineux* was then a novelty to English pharmacy, I took a small quantity for examination. I found that about 200 grs. treated with cold distilled water gave a red solution, which, after filtration through Swedish paper, was perfectly bright and transparent; while the residue on the filter, when washed and dried, was scarcely weighable. Upon warming this clear red liquid, the oxide was precipitated and the liquid became colourless. The same change took place spontaneously in a portion of solution allowed to stand for twelve hours. Upon these results, with some others, the paragraph in question was based. When I read Dr. Smith's communication, therefore, I was somewhat surprised at the statements he made. But this morning I repeated my experiments on a *portion of the same sample* that I first tested. Instead of a red liquid, however, I only obtained a pale straw-coloured solution, nearly the whole of the oxide of iron remaining insoluble on the filter. Its character had entirely changed; that which was soluble three months ago had now become insoluble.

It would appear, therefore, that iron sugar does not retain its solubility for an indefinite time, and I infer that the sample which Dr. Smith examined had passed into the insoluble stage before he received it. Of course I was not aware of this tendency to deterioration by keeping at the time I wrote the notice, and I must admit that it detracts from the value of the preparation.

Nevertheless, I am inclined to think that the oxide of iron in *Sucre Ferrugineux*, even when it has become insoluble, is in a condition in which it is far more easily dissolved by weak acids or the juices of the stomach, than is the ferri peroxidum hydratum of the Pharmacopœia, to which Dr. Smith compares it.

It is an ascertained fact that sugar is capable of associating itself with some hydrate of ferric peroxide, and rendering it soluble, because we find that syrup is capable of preventing the precipitation of a persalt of iron by an alkali, in the same manner that citric acid does. I believe that a transparent syrup of peroxide of iron has been for some time known in Germany; an aqueous solution of pure ferric hydrate being prepared by the process of dialysis indicated by Professor Graham, and afterwards converted into a syrup.

In estimating the dose of iron-sugar, the condition of the oxide should be taken into consideration. I apprehend that most ferruginous waters contain less iron than this preparation, while they are infinitely more unpleasant to take. However, my object is not to defend M. Chanteaud's compound, but to exonerate myself from the suspicion of having made a statement on insufficient authority.

I am, etc.,
C. H. Wood, F.C.S.

SHOP ARRANGEMENTS FOR PREVENTING ACCIDENTS.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Dear Sir,—The lamentable case of poisoning by cyanide of potassium which occurred in Dublin,—recorded in the July Journal,—induces me to send you a few remarks, should you think them worthy of publication. My only reason for sending them is the desire to assist in preventing the recurrence of such frightful catastrophes as the three reported in the Journal of this present month, and thus further prevent legislative interference on the part of the Government respecting the keeping and storing of "poisons," which will certainly follow (and which will prove anything but an agreeable matter) unless druggists, tritons and minnows, cease to conduct their businesses in what cannot be characterized as less than a loose, if not reprehensible manner.

According to the report, the fatal mistake is said to have occurred from the circumstance that one person only instead of two—the usual practice of the firm—was entrusted to replenish the carb. ammonia bottle. The true cause of the sad occurrence was rather the almost incredible fact that a jar containing so deadly a poison (to say nothing of its close resemblance to an ordinary carbonate of ammonia jar) was suffered to be without any label on it whatever!

I hold that, as a rule, the bottles on the shelves of druggists' shops and warehouses, and also in surgeries and dispensaries, should stand alphabetically, but in carrying out this rule certain possible contingencies should be carefully avoided:—Liq. plumb. d. and liq. plumb. d. *d.* should never be allowed to stand together, or, if possible, on the same shelf. The same remark will apply to the liq. ammoniæ and liq. ammon. fort., and other dilute and undilute preparations that will at once suggest themselves. If the alphabetical arrangement be too (*i. e.* quite) strictly followed, in nine cases out of ten it will bring the tinct. opii and tinct. rhei in close juxtaposition, of all things to be avoided. More mistakes probably have occurred by substituting tinct. opii for tinct. rhei than from all other causes put together, and this possibly from the very fact of those bottles being allowed to stand close or near to each other. The tinct. opii bottle should be, if possible, kept in a closed cupboard, and, if with other bottles, they should be totally dissimilar in size and appearance, both in themselves and their contents,—say, with only very small bottles, if the laudanum bottle be a quart or a large one, or with bottles containing only dry articles. If there be no convenient cupboard for its reception it should be placed, not among the tinctures, or preparations similar in colour, but with the waters or spirits. Such bottles as liq. plumb. *fort.*, liq. ammon. *fort.*, antim. tart. might have advantageously a red label "CAUTION" affixed to them; and all bottles, whether in shop or warehouse or dispensary, containing such preparations as morphia; tinct. opii; pot. cyanid.; *ol.* amygd. ess. (specially to distinguish it from the essence); hyd. perchlorid., etc. etc., should have a red label "POISON," with the emblems of mortality—the death's head and cross bones—fixed to the front of them. Strychnia should always be kept in a locked cupboard, the key of which should be held only by the principal himself or the head assistant, and, of course, labelled as the other "poisons."

It is an excellent plan to have all the bottles, etc., on the shelves numbered, so that their displacement may be ensured against. This is still more desirable with small bottles kept in cupboards, and the proper position of every bottle, pot, etc., should be recorded in a book kept for the purpose.

Doubtless many other safeguards may be employed, such as having bottles of peculiar shape or colour, or with peculiar fastenings, in which to keep "poisons;" but if the simple rules I have ventured to recommend had been in force in Dublin and Gravesend, the fatal cases of poisoning by cyanide of potassium at the one place, and strychnia at the other, could scarcely by possibility have occurred; and such rules could readily be adopted in any establishment with the ordinary bottles in use in it.

One word respecting the poisoning by strychnia at St. David's. Mrs. Hicks made two astounding statements,—first, that the strychnia had been supplied to her three years since by a Bristol house as morphia; secondly, that on one occasion her son had used two grains without ill effect. Was this absence of ill effects attributable to its comparative insolubility in water, or to the patient having dispensed with taking the doctor's physic (content to endure his visits only), which patients sometimes will do? The report, abounding with astonishing intelligence, further informs us that the traveller of the Bristol house tacitly admitted the soft impeachment of selling the strychnia for morphia! Did he recollect that about three years since they were sending out the former for the latter? And if Mrs. Hicks's name is made public, why should that of the Bristol house be suppressed, who certainly, if Mrs. Hicks's evidence is correct, were more responsible for the death of poor Mr. Williams than is she?

It is to be deplored that different juries take such widely different views of these fatal cases of poisoning. One individual having caused death by substituting strychnia for sugar, the jury simply record a verdict of "death by misadventure," appending thereto a censure upon the manner in which the poisonous medicines were kept (which was no censure at all upon him who committed the fatal error, but only on his predecessor in the business); while another, for substituting strychnia for James's Powder, is found guilty of manslaughter, and sentenced to two years' imprisonment. Surely both of these were cases of manslaughter or neither was; and the individual last alluded to was either disproportionately punished, or the former was treated with ridiculous leniency.

I am, dear Sir, yours truly,
ROBT. CHIPPERFIELD.

Southampton, 19th July, 1869.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—Two cases of poisoning by strychnia are recorded in the Journal of July. The question I would ask is, "Why is strychnia, for dispensing purposes, kept in any other than a crystalline form?" Had those bottles contained well-defined crystals of strychnia, it could not in the one instance have been dispensed for morphia, or in the other mistaken for sugar. Accidents of this description shake public confidence in dispensing establishments however carefully conducted, and it is incumbent on us to adopt every legitimate method by which a distinctive character may be the invariable attendant of so deadly a poison, yet one so frequently prescribed in the solid form.

I am, Sir, yours, etc.,
THOMAS GREENISH.

20, *New Street, Dorset Square,*
July 20, 1869.

ON SACCHARATED OXIDE OF IRON.

BY E. SIEBERT, OF GÖTTINGEN.

Two parts of iron are dissolved in 24 parts of nitric acid, of specific gravity 1·2; the filtrate is evaporated to 15 parts; when quite cool 12 parts of sugar are dissolved in the liquid, and an excess of a solution of 12 parts of sugar in 12 parts of 20 per cent. water of ammonia is added.*

The mixture is dark brown, at first gelatinous, but after agitation becomes thinner and clearer, and contains then, besides nitrate of ammonia and an excess of sugar, the combination of sugar with ferric oxide. This compound is precipitated by mixing, after twenty-four hours, the clear liquid with four or five times its volume of strong alcohol. The yellowish-brown, flocculent, not very voluminous precipitate is collected upon a filter, washed with alcohol, pressed between bibulous paper, and the still moist mass intimately mixed with its own weight of powdered sugar, and dried by a moderate heat, when some ammonia is evolved, probably from the decomposition by drying of a precipitated compound of ammonia with sugar. The dry, inodorous mass may be triturated with water to a syrup, again precipitated by alcohol, the precipitate treated as before, well washed upon a filter with alcohol, pressed between bibulous paper, dried at ordinary temperature, and rubbed to powder.

Thus prepared it forms a dark brown inodoreus and tasteless powder, readily soluble in water and diluted alcohol; the solutions are precipitated by alcohol, the latter also by ether. On prolonged standing, and at once by boiling, the whole quantity of iron is precipitated as an insoluble compound with sugar; the alcoholic solution is more stable. The aqueous solution is not altered by ferrocyanide or sulphocyanide of potassium; tannin after some time produces a precipitate; sulphhydric acid and sulphide of ammonium precipitate the iron, from very dilute solutions slowly. Alkalies and neutral salts do not decompose the compound, which, however, is separated from its aqueous solution by their halogen compounds. Even weak acids produce decomposition, and ferrocyanide of potassium separates then, gradually, Prussian blue. On heating, the compound loses water, and with it its solubility. Analysis leads to the formula, $C_{12}H_9O_9+2Fe_2O_3 6HO$, which requires 43·59 Fe_2O_3.

For pharmaceutical purposes the product obtained from the first precipitation with alcohol, mixing with sugar and drying is used. It has the same chemical properties as the pure compound, but differs from it by a lighter colour and a sweet taste. It contains 10 per cent. metallic iron, = 14·28 Fe_2O_3. The author calls it Ferrum oxydatum saccharatum.

By dissolving this preparation in little water, and mixing it with simple syrup, a syrupus ferri oxydati may be made, of any desired strength. It has a fine red brown colour, is perfectly clear, and has a purely sweet taste. It may be aromatized by orange-flower water, etc. The dry preparation may well be used in mixtures.

The alcohol is recovered by distillation; to remove the ammonia, the latter is to be previously neutralised by an acid.—*Wittst. Viert. Schr.* 1869, 112–114. *From Pharm. Centralhalle*, 1867, *W.* 41.

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* If the sugar was dissolved in the warm iron solution oxalic acid would be formed, which would afterwards be precipitated by the alcohol as oxalate of ammonia, and render the preparation poisonous. Instead of 20 per cent. water of ammonia, which during the solution of the sugar would lose much gas, it appears advisable to dissolve the sugar at a low temperature in the officinal 10 per cent. water of ammonia.—*Wittstein.*

ON HYDRATED OXIDE OF IRON SOLUBLE IN SUGAR SYRUP AND IN GLYCERIN.

BY DR. H. KOEHLER AND DR. H. HORNEMANN.

Fleischer's capsules of saccharate of iron, and Wagner's and Grossinger's ferrum oxid. dialysatum, consist mainly of a very basic oxychloride of iron, have a styptic taste, blacken the teeth, and change partly into a gelatinous condition. Without knowing of Siebert's method, the process of the authors is similar, but differs in the use of ferric chloride and caustic soda instead of the nitrate and caustic ammonia; both processes are still expensive, the former owing to considerable loss of alcohol.

Equal weights of ferrum sesquichloratum solutum* and simple syrup are mixed, hydrated soda is then added until the precipitate is entirely redissolved, the filtrate is mixed with a large quantity of distilled water and boiled for some time. The presence of the neutral salt $NaCl$ is sufficient to precipitate the hydrated oxide of iron in its soluble modification; the precipitate is collected upon a filter, washed until the filtrate ceases to precipitate silver salts, dissolved with powdered sugar, the solution evaporated to dryness by means of a water bath, and the residue reduced to powder.

Thus prepared it has the following properties:—

1. It yields with water a yellowish-brown, perfectly transparent, chemically indifferent solution, entirely free from styptic taste, and not precipitated by dilution with water or by boiling.

2. Phosphates, carbonates, benzoates, succinates, tannates, sulphocyanides, ferrocyanides, and arseniates of alkalies have no effect on the solution; precipitates are produced by sulphide of ammonium and tincture of galls.

3. An aqueous solution of bibasic phosphate of soda does not produce a precipitate in the cold or on boiling.

4. A minute quantity of a neutral salt added to the concentrated solution separates gradually the entire quantity of the hydrated ferric oxide; the same effect is instantly produced by diluting and boiling the mixture.

5. Organic or mineral acids transform this modification of the oxide into the ordinary kind, the solution becomes lighter in colour, and is then affected by the usual reagents.

6. Bitter principles, like salicin, cetrarin, etc., also digitalin and the vegetable alkaloids, particularly those of morphia, also small quantities of the volatile oils, separate the hydrated oxide in its soluble modification.

By triturating the freshly precipitated oxide in a mortar, to promote the evaporation of the water, and testing the solubility in syrup and glycerin, Hornemann found that the oxide was completely soluble therein when it contained 7·2, 7·03, and 6·6 equiv. of water, but did not yield a clear solution when it contained 5·8 equiv. The authors conclude that this soluble oxide of iron contains 6 equiv. of water of hydration.

Regarding its therapeutical use, the authors state:—

1. That it is resorbed is proven by its secretion through the kidneys.

2. After its use for several weeks, in the form of syrup containing 2 per cent. oxide, or as troches, coating of the tongue, blackening of the teeth and constipation are not observed; the preparation agrees well with chlorotic women, weakened by hemorrhage in abortion, with reconvalescents and weak children; if it should show a tendency to diarrhœa, it must be discontinued for some days.

3. The preparation may be given with fresh milk of an alkaline reaction, with arrowroot, soups of meal and extract of beef, beef tea, coffee and chocolate, the taste of which is not affected.

4. All kinds of wine may serve as vehicles; it may be added to the infusion of bitter remedies like gentian, juglans, quassia, menyanthes and colombo, or united with their extracts; with cinchona it can only be given in the form of pills.

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* The preparation of the Prussian Pharmacopœia contains 15 per cent. Fe.

5. Cold infusions of orange peel and cinnamon may serve as vehicles; with other aromatics it can only be given in the form of powder.

6. It does not possess any astringent properties, and cannot be given with infusions of remedies containing tannin.

7. With resolvents and hepatic remedies (aloes, gall, taraxacum, carduus bened., etc.) it can only be given in pilular form, and with solution of iodide of potassium only by taking the iron syrup afterwards.

8. It must take the place of all other iron preparations as an antidote to arsenic. Rabbits were given 0·1845 grm. AsO_3, and afterwards, at intervals of ten minutes, four doses of grm. saccharated oxide of iron; they fed again eighteen hours afterwards. When poisoned, the quantity of urine was very small, and it contained albumen; after eighteen hours the secretion of urine was regular, and both arsenic and iron were found in it.—*Buchner's N. Repert.*, 1869, 36–42. *From Berlin. Klinische Wochenschr. Halle, July 15th*, 1868.

CONTRIBUTIONS TO THE HISTORY OF EXPLOSIVE AGENTS.

BY F. A. ABEL, F.R.S., FOR. SEC. CHEM. SOC.

(Abstract.)

The degree of rapidity with which an explosive substance undergoes metamorphosis, as also the nature and results of such change, are, in the greater number of instances, susceptible of several modifications by variation of the circumstances under which the conditions essential to chemical change are fulfilled.

Excellent illustrations of the modes by which such modifications may be brought about are furnished by gun-cotton, which may be made to burn very slowly, almost without flame, to inflame with great rapidity, but without development of great explosive force, or to exercise a violent destructive action, according as the mode of applying heat, the circumstances attending such application of heat, and the mechanical condition of the explosive agent, are modified.* The character of explosion and the mechanical force developed, within given periods, by the metamorphosis of explosive mixtures such as gunpowder, is similarly subject to modifications; and even the most violent explosive compounds known (the mercuric and silver fulminates, and the chloride and iodide of nitrogen) behave in very different ways, under the operation of heat or other disturbing influences, according to the circumstances which attend the metamorphosis of the explosive agent (*e. g.* the position of the source of heat with reference to the mass of the substance to be exploded, or the extent of initial resistance opposed to the escape of the products of explosion).

Some new and striking illustrations have been obtained of the susceptibility to modification in explosive action possessed by these substances.

The product of the action of nitric acid upon glycerine, known as nitro-glycerine or glonoine, which bears some resemblance to chloride of nitrogen in its power of sudden explosion, requires the fulfilment of special conditions for the development of its explosive force. Its explosion by the simple application of heat can only be accomplished if the source of heat be applied, for a protracted period, in such a way that chemical decomposition is established in some portion of the mass, and is favoured by the continued application of heat to that part. Under these circumstances, the chemical change proceeds with very rapidly accelerating violence, and the sudden transformation into gaseous products of the heated portion eventually results,—a transformation which is instantly communicated throughout the mass of nitro-glycerine, so that the confinement of the substance is not necessary to develope its full explosive force. This result can be obtained more expeditiously and with greater certainty by exposing the substance to the concussive action of a detonation produced by the ignition of a small quantity of fulminating powder, closely confined and placed in contact with, or proximity to, the nitro-glycerine.

The development of the violent explosive action of nitro-glycerine, freely exposed to air, through the agency of a detonation, was regarded until recently as a peculiarity of that substance; it is now demonstrated that gun-cotton and other explosive compounds and mixtures do not necessarily require confinement for the full development of their explosive force, but that this result is attainable (and very readily in some instances, especially in the case of gun-cotton) by means similar to those applied in the case of nitro-glycerine.

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* Proceedings of the Royal Society, vol. xiii. pp. 205, *et seq.*

The manner in which a detonation operates in determining the violent explosion of gun-cotton, nitro-glycerine, etc., has been made the subject of careful investigation. It is demonstrated experimentally that the result cannot be ascribed to the direct operation of the heat developed by the chemical changes of the charge of detonating material used as the exploding agent. An experimental comparison of the mechanical force exerted by different explosive compounds, and by the same compound employed in different ways, has shown that the remarkable power possessed by the explosion of small quantities of certain bodies (the mercuric and silver-fulminates) to accomplish the detonation of gun-cotton, while comparatively very large quantities of other highly explosive agents are incapable of producing that result, is generally accounted for satisfactorily by the difference in the amount of force suddenly brought to bear in the different instances upon some portion of the mass operated upon. Most generally, therefore, the degree of facility with which the detonation of a substance will develope similar change in a neighbouring explosive substance may be regarded as proportionate to the amount of force developed within the shortest period of time by that detonation, the latter being, in fact, analogous in its operation to that of a blow from a hammer, or of the impact of a projectile.

Several remarkable results of an exceptional character have been obtained, which indicate that the development of explosive force under the circumstances referred to is not always simply ascribable to the sudden operation of mechanical force. These were especially observed in the course of a comparison of the conditions essential to the detonation of gun-cotton and of nitro-glycerine by means of particular explosive agents (chloride of nitrogen, etc.), as well as in an examination into the effects produced upon each other by the detonation of those two substances.

The explanation offered of these exceptional results is to the effect that the vibrations attendant upon a particular explosion, if synchronous with those which would result from the explosion of a neighbouring substance in a state of high chemical tension will, by their tendency to develope those vibrations, either determine the explosion of that substance, or at any rate greatly aid the disturbing effect of mechanical force suddenly applied, while, in the instance of another explosion, which developes vibratory impulses of different character, the mechanical force applied through its agency has to operate with little or no aid, greater force, or a more powerful detonation, being therefore required in the latter instance to accomplish the same result.

Instances of the apparently simultaneous explosion of numerous distinct and even somewhat widely separated masses of explosive substances (such as simultaneous explosions in several distinct buildings at powder-mills) do not unfrequently occur, in which the generation of a disruptive impulse by the first or initiative explosion, which is communicated with extreme rapidity to contiguous masses of the same nature, appears much more likely to be the operating cause, than that such simultaneous explosions should be brought about by the direct operation of heat and mechanical force.

A practical examination has been instituted into the influence which the explosion of gun-cotton through the agency of a detonation, exercises upon the nature of its metamorphosis, upon the character and effects of its explosion, and upon the uses to which gun-cotton is susceptible of application.—*Proceedings of the Royal Society.*

HYDROGENIUM; THE RELATION OF HYDROGEN TO PALLADIUM.

(Continued from page 649, *Vol. X.)*

It has often been maintained on chemical grounds that hydrogen gas is the vapour of a highly volatile metal. The idea forces itself upon the mind that palladium with its occluded hydrogen is simply an alloy of this volatile metal, in which the volatility of the one element is restrained by its union with the other, and which owes its metallic aspect equally to both constituents. How far such a view is borne out by the properties of the compound substance in question will appear by the following examination of the properties of what, assuming its metallic character, would have to be named *Hydrogenium*.

1. *Density.*—The density of palladium when charged with eight or nine hundred times its volume of hydrogen gas is perceptibly lowered; but the change cannot be measured accurately by the ordinary method of immersion in water, owing to a continuous evolution of minute hydrogen bubbles which appears to be determined by contact with the liquid. However, the linear dimensions of the charged palladium are altered so considerably that the difference admits of easy measurement, and furnishes the required density by calculation. Palladium in the form of wire is readily charged with hydrogen by evolving that gas upon the surface of the metal in a galvanometer containing dilute sulphuric acid as usual.* The length of the wire before and after a charge is found by stretching it on both occasions by the same moderate weight, such as will not produce permanent distension, over the surface of a flat graduated measure. The measure was graduated to hundredths of an inch, and, by means of a vernier, the divisions could be read to thousandths. The distance between two fine cross lines marked upon the surface of the wire near each of its extremities was observed.

Expt. 1.—The wire had been drawn from welded palladium, and was hard and elastic. The diameter of the wire was 0·462 millimetre; its specific gravity was 12·38, as determined with care. The wire was twisted into a loop at each end, and the mark made near each loop. The loops were varnished, so as to limit absorption of gas by the wire to the measured length between the two marks. To straighten the wire, one loop was fixed, and the other connected with a string passing over a pulley and loaded with 1·5 kilogramme, a weight sufficient to straighten the wire without occasioning any undue strain. The wire was charged with hydrogen by making it the negative electrode of a small Bunsen's battery consisting of two cells, each of half a litre in capacity. The positive electrode was a thick platinum wire placed side by side with the palladium wire, and extending the whole length of the latter within a tall jar filled with dilute sulphuric acid. The palladium wire had, in consequence, hydrogen carried to its surface, for a period of 1½ hour. A longer exposure was found not to add sensibly to the charge of hydrogen acquired by the wire. The wire was again measured, and the increase in length noted. Finally, the wire, being dried with a cloth, was divided at the marks, and the charged portion heated in a long narrow glass tube kept vacuous by a Sprengel aspirator. The whole occluded hydrogen was thus collected and measured; its volume is reduced by calculation to bar. 760 millims., and therm. 0° C.

The original length of the palladium wire exposed was 609·144 millims. (22·982 inches), and its weight 1·6832 grm. The wire received a charge of hydrogen amounting to 936 times its volume, measuring 128 cubic centims., and therefore weighing 0·01147 grm. When the gas was ultimately expelled, the loss, as ascertained by direct weighing, was 0·01164 grm. The charged wire measured 618·923 millims., showing an increase in length of 9·779 millims. (0·385 inch). The increase in linear dimensions is from 100 to 101·605, and in cubic capacity, assuming the expansion to be equal in all directions, from 100 to 104·908. Supposing the two metals united without any change of volume, the alloy may therefore be said to be composed of

	By volume.	
Palladium	100 or	95·32
Hydrogenium	4·908 or	4·68
	104·908	100

The expansion which the palladium undergoes appears enormous if viewed as a change of bulk in the metal only, due to any conceivable physical force, amounting, as it does, to sixteen times the dilatation of palladium when heated from 0° to 100° C. The density of the charged wire is reduced, by calculation, from 12·3 to 11·79. Again, as 100 is to 4·91, so the volume of the palladium, 0·358 cubic centim., is to the volume of the hydrogenium, 0·006714 cubic centim. Finally, dividing the weight of the hydrogenium, 0·01147 grm., by its volume in the alloy, 0·006714 cubic centim., we find—

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* Proceedings of the Royal Society, p. 422, 1868.

Density of hydrogenium . . . . . 1·708

The density of hydrogenium, then, appears to approach that of magnesium, 1·743, by this first experiment.

Further, the expulsion of hydrogen from the wire, however caused, is attended with an extraordinary contraction of the latter. On expelling the hydrogen by a moderate heat, the wire not only receded to its original length, but fell as much below that zero as it had previously risen above it. The palladium wire first measuring 609·144 millims., and which increased to 9·77 millims., was ultimately reduced to 599·444 millims., and contracted 9·7 millims. The wire is permanently shortened. The density of the palladium did not increase, but fell slightly at the same time, namely from 12·38 to 12·12, proving that this contraction of the wire is in length only. The result is the converse of extension by wire-drawing. The retraction of the wire is possibly due to an effect of wire-drawing in leaving the particles of metal in a state of unequal tension, a tension which is excessive in the direction of the length of the wire. The metallic particles would seem to become mobile, and to right themselves in proportion as the hydrogen escapes; and the wire contracts in length, expanding, as appears by its final density, in other directions at the same time.

A wire so charged with hydrogen, if rubbed with the powder of magnesia (to make the flame luminous), burns like a waxed thread when ignited in the flame of a lamp.

Expt. 2.—Another portion of the same palladium wire was charged with hydrogen in a similar manner. The results observed were as follows:—

Length of palladium wire	488·976 millims.
The same with 867·15 volumes of occluded gas	495·656 „
Linear elongation	6·68 „
Linear elongation on 100	1·3663 „
Cubic expansion on 100	4·154 „
Weight of palladium wire	1·0667 grm.
Volume of palladium wire	0·08072 cub. centim.
Volume of occluded hydrogen gas	75·2 „
Weight of same	0·00684 grm.
Volume of hydrogenium	0·003601 cub. centim.

From these results it is calculated

Density of hydrogenium . . . . 1·898

Expt. 3.—The palladium wire was new, and on this occasion was well annealed before being charged with hydrogen. The wire was exposed at the negative pole for two hours, when it had ceased to elongate.

Length of palladium wire	556·185 millims.
Same with 808·303 volumes hydrogen . . .	563·652 „
Linear elongation	7·467 „
Linear elongation on 100	1·324 „
Cubic expansion on 100	4·025 „
Weight of palladium wire	1·1675 grm.
Volume of palladium wire	0·0994 cub. centim.
Volume of occluded hydrogen gas	84·3 cub centims.
Weight of same	0·007553 grm.
Volume of hydrogenium	0·003820 cub. centim.

These results give by calculation

Density of hydrogenium . . . . 1·977

It was necessary to assume in this discussion that the two metals do not contract nor expand, but remain of their proper volume on uniting. Dr. Matthiessen has shown that in the formation of alloys generally the metals retain approximately their original densities.*

In the first experiment already described, probably the maximum absorption of gas by wire, amounting to 935·67 volumes, is attained. The palladium may be charged with any smaller proportion of hydrogen by shortening the time of exposure to the gas (329 volumes of hydrogen were taken up in twenty minutes), and an opportunity be gained of observing if the density of the hydrogenium remains constant, or if it varies with the proportion in which hydrogen enters the alloy. In the following statement, which includes the three experiments already reported, the essential points only are produced:—

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* Philosophical Transactions, 1860, p. 177.

TABLE.

Volumes of hydrogen occluded.	Linear expansion in millimetres.		Density of Hydrogenium.
	From	To	
329	496·189	498·552	2·055
462	493·040	496·520	1·930
487	370·358	373·126	1·927
745	305·538	511·303	1·917′
867	488·976	495·656	1·898
888	556·185	563·652	1·977
936	609·144	618·923	1·708

If the first and last experiments only are compared, it would appear that the hydrogenium becomes sensibly denser when the proportion of it is small, ranging from 1·708 to 2·055. But the last experiment of the table is perhaps exceptional; and all the others indicate considerable uniformity of density. The mean density of hydrogenium, according to the whole experiments, excluding that last referred to, is 1·951, or nearly 2. This uniformity is in favour of the method followed for estimating the density of hydrogenium.

On charging and discharging portions of the same palladium wire repeatedly, the curious retraction was found to continue, and seemed to be interminable. The following expansions, caused by variable charges of hydrogen, were followed on expelling the hydrogen by the retractions mentioned:—

	Elongation.	Retraction.
1st Experiment	9·77 millims.	9·70 millims.
2nd "	5·765 "	6·20 "
3rd "	2·36 "	3·14 "
4th "	3·482 "	4·95 "
		23·99

The palladium wire, which originally measured 609·144 minims., has suffered, by four successive discharges of hydrogen from it, a permanent contraction of 23·99 millims.; that is, a reduction of 3·9 per cent. on its original length. The contractions will be observed to exceed in amount the preceding elongations produced by the hydrogen, particularly when the charge of the latter is less considerable. With another portion of wire it was carried to 15 per cent. of its length by the effect of repeated discharges. The specific gravity of the contracted wire was 12·12, no general condensation of the metal having taken place. The wire shrinks in length only.

In the preceding experiments the hydrogen was expelled by exposing the palladium placed within a glass tube to a moderate heat short of redness, and exhausting by means of a Sprengel tube; but the gas was also withdrawn in another way, namely, by making the wire the positive electrode, and thereby evolving oxygen upon its surface. In such circumstances a slight film of oxide of palladium is formed on the wire, but it appears not to interfere with the extraction and oxidation of the hydrogen. The wire measured—

		Difference.
Before charge	443·25 millims.	
With hydrogen . . .	449·90 "	+6·65 millims.
After discharge . . .	437·31 "	−5·94 "

The retraction of the wire therefore does not require the concurrence of a high temperature. This experiment further proved that a large charge of hydrogen may be removed in a complete manner by exposure to the positive pole (for four hours in this case); for the wire in its ultimate state gave no hydrogen on being heated *in vacuo*.

That particular wire, which had been repeatedly charged with hydrogen, was once more exposed to a maximum charge, for the purpose of ascertaining whether or not its elongation under hydrogen might now be facilitated and become greater in consequence of the previous large retraction. No such extra elongation, however, was observed on charging the retracted wire more than once; and the expansion continued to be in the usual proportion to the hydrogen absorbed. The final density of the wire was 12·18.

The wire retracted by heat is found to be altered in another way, which appears to indicate a molecular change. When the gas has been expelled by heat, the metal gradually loses much of its power to take up hydrogen. The last wire, after it had already been operated upon six times, was again charged with hydrogen for two hours, and was found to occlude only 320 volumes of gas, and in a repetition of the experiment 330·5 volumes. The absorbent power of the palladium had therefore been reduced to about one-third of its maximum.

The condition of the retracted wire appeared, however, to be improved by raising its temperature to full redness by sending through it an electrical current from a battery. The absorption rose thereafter to 425 volumes of hydrogen, and in a second experiment to 422·5 volumes.

The wire becomes fissured longitudinally, acquires a thready structure, and is much disintegrated on repeatedly losing hydrogen, particularly when the hydrogen has been extracted by electrolysis in an acid fluid. The palladium in the last case is dissolved by the acid to some extent. The metal appeared, however, to recover its full power to absorb hydrogen, now condensing upwards of 900 volumes of gas.

The effect upon its length of simply annealing the palladium wire by exposure in a porcelain tube to a full red heat was observed. The wire measured 556·075 millims. before, and 555·875 millims. after heating; or a minute retraction of 0·2 millim. was indicated. In a second annealing experiment, with an equal length of new wire, no sensible change whatever of length could be discovered. There is no reason, then, to ascribe the retraction after hydrogen, in any degree, to the heat applied when the gas is expelled. Palladium wire is very slightly affected in physical properties by such annealing, retaining much of its first hardness and elasticity.

2. *Tenacity.*—A new palladium wire, similar to the last, of which 100 millims weighed 0·1987 grm., was broken, in experiments made on two different portions of it, by a load of 10 and 10·17 kilogrammes. Two other portions of the same wire, fully charged with hydrogen, were broken by 8·18, and by 8·27 kilogrammes. Hence we have—

Tenacity of palladium wire	100
Tenacity of palladium and hydrogen	81·29

The tenacity of the palladium wire is reduced by the addition of hydrogen, but not to any great extent. It is a question whether the degree of tenacity that still remains is reconcilable with any other view than that the second element present possesses of itself a degree of tenacity such as is only found in metals.

3. *Electrical Conductivity.*—Mr. Becker, who is familiar with the practice of testing the capacity of wires for conducting electricity, submitted a palladium wire, before and after being charged with hydrogen, to trial, in comparison with a wire of German silver of equal diameter and length, at 10·5°. The conducting-power of the several wires was found as follows, being referred to pure copper as 100:—

Pure copper	100
Palladium	8·10
Alloy of 80 copper+20 nickel	6·63
Palladium+hydrogen	5 99

A reduced conducting power is generally observed in alloys, and the charged palladium wire falls 25 per cent. But the conducting-power remains still considerable, and the result may be construed to favour the metallic character of the second constituent of the wire. Dr. Matthiessen confirms these results.

(*To be continued.*)

THE NEW ZIRCONIA-LIGHT.

Three or four months ago the news spread in England, through the medium of the scientific newspapers, that a discovery had been made in France which would have the effect of abolishing the lime-light by substituting zirconia for the lime cylinder. The advantages were stated to be that zirconia is not eaten away by the oxyhydrogen flame, and that when not in use it does not absorb moisture and crumble to pieces like lime; also, that in consequence of this stability the ordinary clockwork of oxyhydrogen lamps to turn the lime cylinder would be unnecessary with zirconia. It was further said that the zirconia gave more light than lime under the same oxyhydrogen flame.

Considerable interest in the new invention was consequently raised in this country among the many who use the lime-light, but weeks passed away without anybody being able to procure the zirconia cylinders in London. One night, however, at a *soirée* at King's College, the zirconia-light was exhibited burning with great steadiness and brilliancy in the presence of Professor W. Allen Miller, F.R.S., and many others, but no accurate tests were made, and both then and afterwards the zirconia cylinders were as unprocurable in London as ever.

Quite recently one of the first zirconia lamps procurable for examination in this country reached London, and was sent by Mr. R. J. Fowler, the Parisian correspondent of the 'British Journal of Photography,' to Mr. John Traill Taylor, the editor of that journal, with the request that he and Mr. W. H. Harrison would test its working qualities. The lamp was the property of Messrs. Harvey, Reynolds, and Co., Leeds. Accordingly, last Wednesday some experiments with the lamp were tried at the workshops of Messrs. Darker Brothers, philosophical instrument manufacturers, at Lambeth.

At present, we are informed, the French company refuses to sell the zirconia cylinders without their lamp be also purchased. This lamp, made for special use with the zirconia, gives a vertical flame, and the piece of zirconia is held in it by a little brass support. The piece of zirconia was excessively small—about as big as a pea—and here at once was a source of great loss of light, because the flame was competent to raise to whiteness several times the area presented to its action. On this account alone the total amount of light was very much less than the same flame gave with a lime cylinder, so as to put competition between the two out of the question, unless the zirconia surface be very greatly increased in size.

The experimentalists then cut down a piece of lime till it equalled the zirconia in size, and the lime and zirconia were exposed in turn to the flame, the result being that the zirconia was found to emit a less white and brilliant light than the lime under the same conditions, nor did variations in distance from the nozzle of the jet alter this result. Next, many variations in the pressure of the gases were tried, but the result was not altered. Then, substituting an English "blow-through" jet for the blowpipe sold by the French company, the same inferiority of the light from the zirconia was perceptible, nor did variations of pressure affect the result. Lastly, a good orthodox oxyhydrogen blowpipe was tried, wherein the two gases mix thoroughly some little distance behind the nozzle, and again the results were the same.

These conclusions do not in any way affect the question of the permanency of zirconia under the fierce heat of the oxyhydrogen flame; but such permanency, if purchased at the expense of inferior light, is too dearly bought, and will condemn the invention. Unless the inventors are acquainted with some peculiarities of zirconia unknown to those who are versed in the use of the lime-light, and can by an unknown method bring out a light from the zirconia equal to that given by lime, the zirconia-light, from an economical point of view, is a failure.

A few other experiments were tried, showing that soft lime and hard lime have to be placed at different distances from the blowpipe nozzle to get the maximum amount of light from each. Chemical composition, even more than hardness, varies the amount of whiteness of the light. Magnesia cylinders were found to take a longer time to heat to whiteness and a longer time to cool than either lime or zirconia. Quartz rapidly vitrified under the flame, and asbestos could not resist the intense heat. It requires time and repeated heatings and coolings to test the permanency of zirconia under the oxyhydrogen flame to ascertain whether it does away with the necessity for clockwork apparatus. The piece used on Wednesday looked at the close of the experiments none the worse for the operations it had undergone, and a native zircon crystal, which on previous occasions Messrs. Darker had occasionally ignited under the oxyhydrogen blowpipe, is now as hard as ever, having shown no tendency to crumble or soften like lime beneath atmospheric influences. The heat had produced in it traces of vitrification, which could be seen only by the aid of a lens.—*The Engineer.*

BORAX LAKE, CALIFORNIA.

This sheet of water, the Lake "Kaysa" of the Indians, is situated in Lake County, 110 miles from San Francisco, and lies a little east of Clear Lake about halfway between Cache Creek and Hawkin's Arm.

This lake, which is separated from Clear Lake by a low range of hills belonging to the cretaceous period, has, under ordinary circumstances, a length of about a mile and an average width of half a mile. Its extent, however, varies considerably at different periods of the year, since its waters cover a larger area in spring than during the autumnal months. No stream of any kind flows into the basin, which derives its supply of water from the drainage of the surrounding hills, as well as, in all probability, from subterraneous springs discharging themselves into the bottom of the lake. In ordinary seasons the depth thus varies from 5 feet in the month of April, to 2 feet at the end of October.

Borax occurs in the form of crystals of various dimensions imbedded in the mud of the bottom, which is of an exceedingly unctuous character, and is found to be most productive at a depth of about 3½ feet, although a bore-hole, which was sunk near its centre to a depth of 60 feet, afforded a certain proportion of that salt throughout its whole extent.

The crystals thus occurring are most abundant near the centre of the lake, and this rich portion extends over an area equivalent to about one-third of its surface. They are, however, also met with in smaller quantities in the muddy deposit of the other portion of the basin, some of them being, in the richest part before alluded to, over a pound in weight. The largest crystals are generally enclosed in a stiff blue clay, at a depth of between 3 and 4 feet, and a short distance above them is a nearly pure stratum of smaller ones, some 2½ inches in thickness, in addition to which crystals of various sizes are disseminated throughout the muddy deposit of which the bottom consists.

Besides the borax thus found in a crystalline form, the mud is itself highly charged with that salt; and according to Oxland, when dried, affords (including the enclosed crystals) 17·73 per cent. Another sample, analysed by Mr. Moore, of San Francisco, afforded him 18·86 per cent. of crystallized borax.

In addition to this the deposit at the bottom of the other portions of the basin, although less productive, still contains a large amount of borax, and it has been ascertained by sinking numerous pits on the lake shore, that clay containing a certain portion of this salt exists in all the low grounds around it.

The borax at present manufactured is exclusively prepared from the native crystals of crude salt, whilst the mud in which they are found is returned to the lake, after the mechanical separation of the crystals by washing. The extraction of mud from the bottom is effected by the aid of sheet-iron coffer-dams, and dredging machines worked by manual power, the whole of the labourers being Chinese. Until 1866 the only apparatus employed consisted of a raft covered by a shingled roof, with an aperture in its centre, about 15 feet square, and above which were hung, by suitable tackle, four iron coffer-dams, each 6 feet square and 9 feet in depth. This raft or barge was moved in parallel lines across the surface of the lake, and at each station the four dams were sunk simultaneously by their own weight into the mud forming the bottom. When they had thus become well imbedded, the water was baled out, and the mud removed in buckets to large rectangular washing-vats, into which a continuous stream of water was introduced from the lake by means of Chinese pumps, the contents of the cisterns being at the same time constantly agitated by rakes.

At the present time dredging-machines are employed for bringing up the mud and crystals from the bottom of the lake, and these are introduced into cisterns and washed as above described. In this way the turbid water continually flows off, and a certain amount of crystallized borax is finally collected in the bottom of each tank. This is subsequently recrystallized, but from the density acquired by the washing water, of which some hundred thousand gallons are daily employed, it is evident that less than one-half the borax existing in the form of crystals is thus obtained, whilst that present in the mud itself is again returned to the lake.

In 1866, when I visited this locality, the crystals of crude borax daily obtained amounted to about 3000 lb., and after being carefully washed they were dissolved in boiling water and recrystallized in large lead-lined vessels, from which the crystallised borax was removed into boxes each containing a hundredweight.

The amount of refined salt daily obtained varied from 2500 to 2600 lb., which was produced, as nearly as I could calculate, at a cost of about £18 per ton.

It is evident from the foregoing description that the system of working employed is exceedingly crude, and by no means calculated for obtaining the best results, and that in order to do so it would be necessary to adopt some efficient process for the lixiviation of the mud after its removal from the bottom of the lake, and the recrystallization of the borax thus obtained.

The total extent of the muddy deposit considerably exceeds 300 acres; and if we assume that of this area 100 acres, or that portion only now worked for borax crystals, would be sufficiently rich to pay the expenses of treatment by the process at present employed, we shall arrive at the following figures:—

One hundred acres are equivalent to 484,000 square yards, and if the mud were worked only to a depth of 3½ feet, this would represent about 565,000 cubic yards; or, allowing a cubic yard to weigh a ton, which is a very low estimate, the total weight of 100 acres of mud, in its wet state, will be approximately 565,000 tons. If the mud, as extracted from the lake, be now assumed to contain 60 per cent. of water, there will remain 226,000 tons of dry mud, containing, according to the mean of the analyses of Messrs. Oxland and Moore, 18·29 per cent. of borax; but if in practice only 12 per cent. of borax were obtained, this area alone would afford 27,120 tons of crystallized salt.

According to Mr. S. M'Adam, of Edinburgh, to whom a specimen was forwarded for analysis, the crude borax from Borax Lake has the following composition:—

Biborate of Soda, dry	51·85
Water of Crystallization	45·44
Insoluble matter	1·42
Sulphate of Soda, dry	0·06
Chloride of Sodium, dry	0·08
Phosphate of Soda, dry	1·15
	100·00

Mr. Moore, of San Francisco, gives the following as the composition of the water of Borax Lake, which has a mean specific gravity of 1·0274:—

In an Imperial gallon.

Chloride of Sodium	1198·66
„ Potassium	9·92
Iodide of Magnesium	·22
Bromide „	trace
Bicarbonate of Magnesia	„
„ Soda	188·28
„ Ammonia	trace
Carbonate of Soda	578·65
Biborate „	281·48
Phosphate of Alumina	3·52
Sulphate of Lime	trace
Silicic acid	2·37
Matters volatile at a red heat	238·66
	2,501·76

In the foregoing analysis all the salts have been calculated as being anhydrous; but crystallized borax contains about 47 per cent. of water, and hence the 281·48 grains found will correspond to 535·08 grains of crystallized salt. Besides the amount of biborate of soda contained in the mud of the lake, its waters are therefore capable of affording at least 6000 additional tons.—*Naturalist's Note-Book.*

ON THE INFLUENCE OF DRYING ON THE ACTIVE PRINCIPLES OF PLANTS.*

BY DR. LEOPOLD SCHOONBROODT, APOTHECARY AT LIÉGE.

The author extended his examination to 29 plants, selected for the importance and frequency of their use in medicine. The process of examination was based upon the principles of Stas' method.

The carefully selected plants, when possible collected of wild growth, were divided into two equal parts, one of which was dried, if necessary, with artificial heat, then powdered, the loss in drying replaced by water, after maceration for 24 hours displaced with 95 per cent. alcohol, and the tincture treated like that of the fresh portion.

The other half of the fresh plant was reduced to small fragments, macerated with 95 per cent. alcohol for 24 hours, then expressed and again macerated as before. The liquids were united, filtered and distilled at a temperature of 56 to 60° C., the residue filtered and the filtrate evaporated over sulphuric acid under a bell-glass; the residue upon the filter was kept separate.

The treatment of plants containing alkaloids was modified by adding tartaric acid to the tincture, to ensure the solubility of the alkaloid in the aqueous solution of the alcoholic extract.

Treatment of the dry extract.—1. *Plants with alkaloids.* The dry extract was mixed with its own weight of burned lime, the mixture treated with twice the weight of 95 per cent. alcohol, and after 24 hours with four parts of ether, well agitated and then decanted; the sediment was twice treated in the same manner. The liquid was evaporated spontaneously, the residue dissolved in dilute sulphuric acid, filtered, precipitated by carbonate of potassa and dissolved by absolute alcohol.

This second evaporation usually yielded the alkaloid crystallised, particularly from the fresh plants. In the case of liquid alkaloids, caustic instead of carbonate of potassa was taken, and ether in place of alcohol; after proving its identity, the quantity of the alkaloid was estimated by titration with oxalic acid.

The comparative treatment of plants with alkaloids frequently gave very exact results, particularly when the alkaloids or their salts are crystallizable; this was less frequently the case when the plants contained no alkaloids and the active principle is incompletely characterized.

2. *Plants without alkaloids.* The dry extract was treated with strong ether, and the filtrate evaporated spontaneously; the undissolved portion was treated with a mixture of 8 vol. strong ether and 2 vol. 95 per cent. alcohol, and the filtrate evaporated spontaneously. The residue was treated with cold distilled water, and the liquid evaporated over sulphuric acid.

The table on the following page contains the results obtained by the author with the most important drugs.

The leaves of *Anemone Pulsatilla*, collected in April, yielded fresh, but not dried, anemonin, little amorphous alkaloid, and a yellow, very acrid resinous matter.

Chelidonium majus (herb), collected in July, yielded, after drying, only chelidonina, but no chelerythrina.

Nicotiana Tabacum (leaves), collected in July, yielded two grm. pure nicotina; after drying scarcely half the quantity.

Digitalis purpurea (leaves, June). The extract yielded to alcoholic ether 0·60 grm.

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* Condensed from Wittstein's Vierteljahresschr. für prakt. Pharm. 1869, p. 78–110. The author, who died Dec. 1, 1866, was by the Société Royale des Sciences Médicales et Naturelles de Bruxelles, awarded a gold medal for this essay, which was published in Journ. de Méd. de Brux. 1867 and 1868.

PLANTS, AND WHEN COLLECTED.	TINCTURE.	DISTILLATE.	RESIDUE ON FILTER.	EXTRACT.	TREATMENT WITH CaO AND ALCOHOLIC ETHER.
Atropa Belladonna. Leaves, June, fresh.	Dark green, bitter.	Almost inodorous and tasteless, no reaction.	Deep green, almost wholly chlorophyll.	Dark brown, faint odour, intense taste.	White, amorphous, alkaline. Yields 0·53 grm.*
Dried.	Brown-yellow, bitter.	Inodorous, tasteless.	Brown, resinous, inodorous, soluble in ether.	Blackish, taste bitter and sweetish.	Crystallized with difficulty, but saturated same amount of acid.
Hyoscyamus niger. Leaves, June.	Deep green, odour virous, taste acrid.	Odour and taste faint, no reaction.	Dark green, soluble in ether, apparently fat and chlorophyll.	Brownish, bitter.	White, amorphous. By SO_3 and $KOCO_2$ colourless needles, yield ·41 grm.
Dried.	Deep brown, inodorous.	Inodorous, tasteless.	Black, pitch-like, soluble in ether.	Brown, inodorous, bitter.	Uncrystallizable, faint alkaline reaction.
Datura Stramonium. Herb, July.	Dark green, acrid and bitter.	Weak, disagreeable odour and taste.	Blackish, virous odour, fat, resin, and chlorophyll.	Light brown, bitter, somewhat acrid.	Crystalline, bitter, acrid, yield 0·65 grm.
Dried.	Brown, bitter.	Inodorous, tasteless.	Blackish, inodorous.	Brownish, bitter.	With difficulty crystallizable, same saturating power.
Solanum Dulcamara. Stems, late in Sept. The same results with the dried stalks.	Light greenish-yellow, odour unpleasant, taste sweet, bitterish.	Disagreeable odour.	Dark green, slight odour.	Greenish-brown, sweet, bitter, and slightly acrid.	Amorphous; when re-precipitated from SO_3 and treated with alcohol: crystals of solania. The lime retained a yellow amorphous glucoside, probably picro-glycion.
Colchicum autumnale. Corms, November.	Yellowish, sweet and burning taste.	Acid reaction, slightly acrid.	Greenish, faint odour of benzoin.	Orange-yellow.	Alkaline needles intermixed with greenish amorphous acrid matter, acids and alkalies destroy alkaline reaction and crystalline structure.
Dried.	Darker, more bitter.	No reaction, odour, or taste.	As above.	Brownish.	White amorphous colchicia, without alkaline reaction.
Aconitum Napellus. Cultivated leaves, June.	Deep green, bitter, then acrid.	Acid reaction, burning taste; salts of Ag, Au, and Pt, reduced.	Dark green, virous odour, taste slightly acrid and bitter.	?	The result treated like Dulcamara, yielded ·30 grm. needles (aconellina?) and about ·30 grm. oily aconitia, gradually becoming resinous.
Dried.	Brown, bitter acrid.	No reaction, odour, or taste.	Blackish, slightly acid and acrid.	?	Amorphous, resin-like.
Conium maculatum. Leaves, May.	Green, repulsive odour, very acrid.	Neutral, tasteless, faint narcotic odour.	Green, oily, virous odour.	Light brown.	0·35 grm. conia.
Dried.	Light brown, taste weaker.	Nearly inodorous.	Black, resinous, inodorous.	Brownish.	0·10 grm. conia, and products of decomposition.

* From 250 grammes of the fresh drug; the subsequent figures refer to the same weight.

of a straw-yellow, very bitter substance; from the dried leaves a little less and deeper yellow.

Menyanthes trifoliata (leaves, August), yielded 0·45 grm. menyanthin; from the dried leaves uncrystallizable.

Marrubium vulgare (leaves and tops, June), yielded 0·70 crystallised marrubiin; from the dried, about one half.

Tanacetum vulgare (flowers, July). Bitter principle, darker from the dried.

Absinthium vulgare (leaves and tops, cultivated, July). The dried yields less aromatic preparations, and an extract-like, bitter principle.

Ergot (July). Carefully dried and powdered; it was divided into two parts, one of which was kept under alcohol in a well-filled bottle, the other kept dry in a paper box for ten months, after which time it was macerated for fifteen days in the same quantity of alcohol. The two portions were then treated exactly alike. The ergot was exhausted with alcohol in a displacement apparatus, the tincture evaporated in a water-bath, and finally over sulphuric acid. The extract was treated with distilled water, and the filtrate concentrated at the ordinary temperature over sulphuric acid.

The extracts, exhausted by water (loss about one-fourth), yielded to ether about five-sixths of their weight, and the residue, about one-eighth of the alcoholic extract, was a red granular powder—Wiggers' ergotin. The etherial solution, on evaporation, yielded fixed oil and crystallized cholesterin. The fixed oil, from the old ergot, was orange-red, that from the fresh (kept under alcohol) was thinner and orange-yellow. No other difference was thus far observed.

The concentrated aqueous solution of the alcoholic extract had separated more of Wiggers' ergotin and crystals of mycose; the clear liquid was evaporated as before to near dryness (the residue of the fresh was more granular), and, since pure ether was without effect, treated with alcoholic ether, which on evaporation yielded yellow acicular crystals, regarded as pure Bonjean's ergotine (0·25 per cent. from the fresh, 0·20 from the old). The extract treated with alcoholic ether was entirely soluble in absolute alcohol except a little mycose; on spontaneous evaporation a little more mycose was separated, and then a reddish (rather darker from old ergot) oily mass was left, consisting mainly of lactic acid.

Rhus radicans (leaves, July). The distillate from the dried leaves was without odour and acid reaction, and did not reduce the salts of silver, platinum, and gold.

Ruta graveolens (leaves, July). The tincture of the fresh leaves deprived of the alcohol by distillation separated an odorous green oil, which, removed by ether, left a yellowish granular glucoside of a bitter, somewhat acrid taste. From the dried leaves the oil was not obtained, and the glucoside merely as a brown extract.

Valeriana officinalis (root collected in September, from high dry situations). The resin of the dried root is more acrid than in the fresh. 250 grm. of the former yielded 1 grm. valerianic acid. The distillate from the fresh root was neutral, had a slight odour, but on exposure to the air in the presence of alkalies, yielded 1·5 valerianic acid.

Prunus Laurocerasus (leaves, June). Lose all their virtues by drying.

Bryonia dioica (root, October). Results alike from the fresh and dried.

Inula Helenium (root of second year's growth, October). The constituents are somewhat altered. The sugar is obtained from the fresh root in white hexagonal prisms, from the dried root granular.

Saponaria officinalis (root, October). The saponin from the fresh root is white granular, from the dried amorphous coloured.

Juniperus Sabina (leaves and tops, July). The dried yields a browner, less odorous, more acrid tincture.

Aspidium Filix-mas (rhizome, September). The tincture of the dried browner and more acrid, but weaker in odour than from the fresh. The distillate from the latter has a disagreeable odour and taste, reduces the salts of the noble metals, and evaporated with potassa, leaves a soaplike residue,—properties which are not observed in the distillate of the tincture from the dried rhizome.

His experiments lead the author to the following conclusions:—

1. Dried plants never represent entirely the fresh. The generation of valuable constituents during the drying process, as valerianic acid in valerian, must be regarded as exceptional.

2. The alterations produced in drying consist in the volatilization of a portion of the

volatile constituents and in the oxidation of most of the fixed and the remaining volatile constituents. During the drying process the water in the cells is partly replaced by air, the influence of which upon the remaining constituents is intensified by the porosity of the dry plant.

3. It is always advantageous to use fresh plants for the preparation of alkaloids and other active principles, and to employ as low a temperature as possible.

4. The composition of the fresh plants is more simple than is frequently supposed; they generally contain, besides cellulose, the saccharine, starchy and albuminous principles and the mineral salts, a volatile principle, either a carbohydrogen or aldehyde; a bitter or acrid principle, which is either an alkaloid or glucoside; a colouring principle and often fat.

5. To reduce the injurious influence of the atmosphere, it appears advisable to hasten the drying and then compress the dry plants, as is the custom in North America.—*J.M.M. American Journal of Pharmacy.*

POISONING BY PRUSSIC ACID.

The lamentable case of poisoning of a whole family was investigated before Mr. W. J. Payne, the deputy-coroner for the City of London, on Wednesday, June 30th. The inquest was on the bodies of Walter James Duggan, Emma Charlotte Duggan, his wife, and their six children, who were found dead in their lodgings, at 15, Hosier Lane, Smithfield, on Monday, June 28th. The evidence adduced was to the following effect:—In consequence of a letter received at the Smithfield Police Station, Sergeant Evans went to the house, 15, Hosier Lane, and, having effected an entrance at the back of the premises, in the first room examined was found a one-ounce bottle and a Bible, the latter contained the names of all the family. The bottle bore the following label, with the word "Poison" legibly printed:—"Hydrocyanic acid, of Scheele's strength. *Minimum* dose, one drop. *N.B.* This preparation is rather more than twice as powerful as the solution obtained by Vauquelin's process. It is necessary to be exceedingly careful in the preservation of hydrocyanic acid, otherwise the liquid becomes weaker, and at length almost inert, although it may still remain colourless. This change may be effectually prevented by keeping the vial perfectly closed, inverted, and in a cool place."

In the second room was found the deceased man, in bed, and on a chair close to the bed was another bottle, similar to the former, and labelled in the same manner. In another room was the body of the eldest boy, and on a bed in the same room the body of the woman with the two youngest children, and at the foot of the bed another child dead. The bodies of two more children were in a small bed. This evidence was corroborated by police-constable M'William.

Mr. W. Vorley, wholesale chemist, 11, King Street, Snow Hill, stated as follows, "On the 24th of June I sold two bottles, similar to those, to a man I knew as Fearon, and he signed my book in accordance with the Act of Parliament. (It was stated that this signature bore a striking resemblance to the handwriting of the deceased man.) I cannot recognize the two bottles produced as mine. They are similar to those I sell, and every chemist in London has exactly the same kind. Prussic acid is generally sold in one-ounce bottles, and they are all labelled alike. The deceased is certainly not the man Fearon. I admit having told William Smith, a city detective officer, that I sold the bottles, but that was before I had seen the body. Fearon is a tinplater, and I believe prussic acid is used in that and the silver trades with cyanide of potash. If I knew the person applying for prussic acid was in either of those trades I should sell it him, as a matter of course, but not to a stranger. I should take that person's word for it. I generally take the name and address of persons to whom I sell poison, but I did not in Fearon's case."

It was explained that prussic acid was not used in the silver or the plating trade. The coroner observed that the evidence of this witness did not touch the case, as he did not recognize the buyer of the poison, but if the Act had been infringed he had no doubt the Pharmaceutical Society would take cognizance of it.

Mr. Frederick William Wilson, M.B., of Farringdon Street, who was called in by the police, stated that he had made a *post mortem* examination of the bodies. Death in all the cases had, no doubt, been caused by prussic acid, which, in his opinion, was administered in its pure state, and not mixed with ale, as was at first supposed.

Elizabeth Smith, mother of the man Duggan, identified the body of her son, and produced a letter addressed to his brother in Bristol; it was written in a very desponding tone, complaining bitterly of the unkind treatment of his employers in discharging him.

Mr. W. Adams, of the firm of Chawner and Co., silversmiths, referred to in the letter of the man Duggan, stated, that the man had given him notice that he should leave, on account of ill health. He could not understand his writing such a letter, which was a most distressing return for his kindness to Duggan.

The coroner having remarked on the distressing nature of the case, the jury returned the following verdict:—"That Walter James Duggan and Emma Duggan murdered their children, and afterwards destroyed themselves while in an unsound state of mind."

TEST FOR PRUSSIC ACID.

We learn from the 'Journal des Connaissances Médicales' that at the last sitting of the French Academy of Medicine, Dr. Scouttetenn communicated the substance of an essay which created quite a sensation. It was a posthumous disquisition on hydrocyanic acid, found among the papers of the late celebrated Professor Schönbein, of Baden. The question discussed was, whether there was a test for the above-mentioned liquid besides those of M. Liebig and M. Buignet, which, within certain limits, may reveal the presence of prussic acid, but are insufficient to fix its quantity and detect a crime with certainty. Professor Schönbein then proceeds to describe a reagent discovered by himself, and delicate enough to bring out to view even the millionth part of a drop, whether diluted with water, or vaporized in the air, a circumstance affording a new proof of the incalculable divisibility of matter. Dr. Scouttetenn, who lives at Metz, announced in his communication that he had repeated the late Professor Schönbein's experiments with the aid of two chemists, MM. Guébin and Pont, and that he begged to submit some of the test-paper prepared by himself to the Academy for further trial. The specimen forwarded was of the kind called filtering-paper, and had been soaked in a solution of 3 grammes of guaiacum resin in 100 grammes of alcohol. To use it, a solution of 10 decigrammes of sulphate of copper in 50 grammes of distilled water should be made, and the paper, which is white, cut into narrow slips. One of the latter being wetted with the solution, it is then exposed to the action of the minute quantity of hydrocyanic acid dissolved in water and suspended in the air: the paper will then instantly turn blue. Dr. Scouttetenn remarks that these slips of paper will be useful in examining the quality of the medicinal waters or syrups containing a very small quantity of the acid. The paper need only be placed on the unstoppered neck of the phial containing the medicine, and the blue colour will at once become visible. Various other experiments are described, all tending to the same result.—*Medical Press and Circular.*

EXPLOSION OF NITRO-GLYCERINE.

Another terrible explosion of nitro-glycerine has occurred in the neighbourhood of Carnarvon. It appears that four tons of this explosive agent formed part of a cargo from Hamburg (Messrs. Noble and Co.) to Carnarvon, consigned to Messrs. De Winto and Co., for Messrs. Webb and Cragg, agents for that district; for the purpose of blasting rocks. The vehicles for removing the oil from the quay at Carnarvon to the Penrhyn slate quarries not having arrived at the time appointed, two carters undertook to remove a portion of it. These two carts, when about 5½ miles from Carnarvon, were in company and were observed within a few yards of each other just before the explosion occurred. The effects of the explosion were most terrific,—clouds of dust and stones, and portions of the carts were thrown to a great height,—part of a wheel was found 300 yards from the spot, many of the buildings in the neighbourhood were much injured, and the shock was felt for many miles. Besides the death of five men, several were severely injured

An inquest was held, but as all those who could have given any evidence were killed, the jury could only return a verdict of "Accidental death."

It has been supposed that a portion of the nitro-glycerine had crystallized, as in the Newcastle accident, and exploded from the concussion caused in passing over a rough road.

At a meeting of the Mersey Docks and Harbour Board, it was stated, with reference to the above case, that the Acts of the Board contained no provision for the detention of nitro-glycerine, unless marked "specially dangerous." It is the intention of the Board to get an Act to assimilate with the Gunpowder Act of 1865, to enable them to deal with this and the like explosives.

In connection with the above case, Mr. R. Humphreys, manager of the Enamelled Slate Works, Carnarvon, has been summoned before the mayor, charged with keeping on his premises a dangerous and explosive substance, called "dynamite," the premises not being duly licensed for the purpose.

Mr. Orlando Webb, owner of the dynamite, gave evidence that it was not explosive, unless it had a percussion cap of strong fulminate powder applied to it. Sergeant-Major Howells described an experiment made on a cask of it in 1868, when Mr. Webb and others were present. The cask was shot at, and on a second occasion it exploded with terrific force. The magistrates, in acquitting the defendant on this occasion, declined granting a certificate prohibiting further investigation.

SUSPECTED POISONING BY ARSENIC.

At Swaffham the magistrates have been occupied with the investigation of a case of suspected poisoning. Two persons, named William George Davy and Susannah Davy, husband and wife, were brought up charged with administering a quantity of arsenic to John Mayes Davy, a brother of the male prisoner, with intent to kill and murder him. John Mayes Davy is a single man and a working miller at Swaffham. William George Davy is a baker, at Pakefield, near Lowestoft, Suffolk. The mother of the Davys lately died, leaving a little property, which she bequeathed in equal portions to her sons. On the 8th ult. John Mayes Davy went to London to receive his own and his brother's share of the legacy. He returned from London by way of Pakefield for the purpose of spending a few days with his brother, to whom he paid £40—his share of the legacy. Before John Mayes Davy left his brother's house, Mrs. Davy gave him six small currant cakes, which she said she had made for him as she knew he liked them. John Mayes Davy ate three of the cakes and felt no ill effects, but while eating a fourth cake he remarked that the cake contained some white specks in it. As soon as he reached home he was seized with violent vomiting and purging, which continued nearly all the night. Mr. Marriott, surgeon, was sent for, and at once pronounced the man to be suffering from the effects of poison. The remains of the fourth cake, which had not been quite eaten, were handed to Mr. Marriott, who on analysing the contents found a great quantity of arsenic,—so much, indeed, that it could be seen with the naked eye. The theory of the prosecution now instituted against William George Davy and his wife is that they wished to obtain possession of the second share of the legacy. John Mayes Davy was confined to his bed for some days.

REGULATIONS FOR THE PRELIMINARY EXAMINATION OF THE PHARMACEUTICAL SOCIETY IN THE PROVINCES.

The Middle Class Examinations of Oxford, Cambridge, or Durham, and the Examination of the College of Preceptors, or of any legally constituted Examining Body of the United Kingdom, *provided Latin is included as one of the subjects*, are accepted in lieu of this Examination, or, where the Candidate resides more than ten miles from London, he may be examined by a graduate of one of the Universities of Great Britain, a member of the College of Preceptors, or an Examined Pharmaceutical Chemist approved and appointed to conduct such examination by the Council of the Pharmaceutical Society.

Form of Authority to Examine.

We hereby authorize of to examine apprentice or pupil to of as to his general elementary knowledge of the Latin language, English grammar, composition, dictation, and arithmetic as far as vulgar fractions and decimals.

The entire value of this examination is represented by 300, viz.:—

Latin—grammar—translation of a passage from the first book of Cæsar (*De Bello Gallico*)	100
English grammar, composition, and dictation	100
Arithmetic	100

No candidate can be registered unless he obtain a total of 150 marks. In the event of his obtaining a total of 150 marks, but failing to obtain one-fourth of the standard number in one subject, he shall be required to present himself on a subsequent occasion to be examined in every subject in which he shall have failed to obtain one-half of the standard number of marks.

By order of the Council,

President.
Secretary.

18 ,
17, *Bloomsbury Square, London.*

Certificate of Examination.

I hereby certify that I have examined apprentice or pupil to of agreeably with the regulations of the Board as set forth on the face hereof, as to his classical and general education, and hereby report that I award to him in—

	Marks.
Latin	
English composition, etc.	
Arithmetic	
Total	

Signed
Qualification
Of
This day of 18 .

To the Chairman of the Board of Examiners.

N.B.—This document, duly signed and filled up, is to be forwarded, under seal, to "The Chairman of the Board of Examiners."

A BILL [AS AMENDED IN COMMITTEE] TO PROHIBIT FOR A LIMITED PERIOD THE IMPORTATION, AND TO RESTRICT AND REGULATE THE CARRIAGE, OF NITRO-GLYCERINE.

Whereas the carriage and conveyance of nitro-glycerine has been found to be attended with great risk and danger to the lives and property of her Majesty's subjects, and it is desirable to restrict and regulate such carriage, and in particular to prevent the mischief which might arise from explosions in the removal and landing of nitro-glycerine from ships, and for that purpose to prohibit the importation thereof: be it enacted, by the Queen's Most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal and Commons in this present Parliament assembled, and by the authority of the same, as follows:—

1. This Act shall come into operation on the 1st day of October, 1869, and shall continue in force for the period of one year next following.

2. This Act may be cited for all purposes as "The Nitro-Glycerine Act, 1869."

3. In the interpretation of this Act "nitro-glycerine" means the substance called or known by that name, or as glonoine oil, and this Act extends to every substance having nitro-glycerine in any form as one of its component parts or ingredients in the same manner as if it were nitro-glycerine: "Court" includes any justices, sheriff, or magistrate exercising jurisdiction under the powers of this Act: "person" includes body corporate, *mutatis mutandis*.

4. So long as this Act shall be in force, it shall not be lawful for any person to import into any part of the United Kingdom from any other country or place any nitro-glycerine for any purpose whatever, or—

(2.) To sell any nitro-glycerine for any purpose whatever, except to workmen in his employ:

(3.) To carry nitro-glycerine along any public highway, canal, river, or navigation:

(4.) Except with such licence and under such regulations as provided in this Act, to make, keep, store, have in his possession, or carry any nitro-glycerine.

Every person who acts or attempts to act, or permits any person to act, or is party or privy to acting, in contravention of this section, shall be liable on summary conviction to a penalty not exceeding £100, or, in the discretion of the Court, to imprisonment for a period not exceeding twelve months, with or without hard labour.

5. Every person who shall at any time, while this Act shall be in force, commit any of the following offences, that is to say:—Being the master or having the command of any ship or vessel, British or foreign, which shall to his knowledge have any nitro-glycerine on board thereof, shall bring such ship or vessel into any port or harbour within the United Kingdom, unless compelled to do so by stress of weather only, shall, on summary conviction, be liable, at the discretion of the Court, to be imprisoned, with or without hard labour, for any term not exceeding one year, or shall forfeit and pay such sum of money not exceeding £100 as such Court shall order.

6. One of her Majesty's principal Secretaries of State may from time to time make, vary, and revoke such regulations as he may think necessary for ensuring safety respecting the making, keeping, storing, possession, and carrying of nitro-glycerine. The Secretary of State may, if he think fit, grant, after such inquiry as he thinks necessary, a licence to any person to make, keep, store, carry, and move nitro-glycerine for the purposes of the trade of such person, or for scientific purposes, such licence to be for such period and subject to such conditions, and revocable and determinable under such circumstances, as he thinks fit; but every such licence shall be subject to the provisions of this Act and to the said regulations. Any person who violates the conditions of his licence shall be deemed to be an unlicensed person. Any expense incurred by the Secretary of State in making inquiry respecting the propriety of granting a licence, or in inspecting or ascertaining whether the conditions of such licence are observed, or otherwise in respect to such licence, shall be defrayed by the applicant for a licence or the licensee (as the case may be).

7. If it is shown to the satisfaction of one of her Majesty's principal Secretaries of State that any substance having nitro-glycerine in any form as one of its component parts or ingredients can safely be carried along any public highway, canal, river, or navigation, the Secretary of State may by order permit such substance to be so carried with such precautions (if any) as he thinks fit to specify in the order. Such order shall be published in the 'London Gazette,' and thereupon such substance shall, if carried in accordance with the provisions of the order, be exempted from the prohibition on carriage contained in this Act. Every such order shall be laid before both Houses of Parliament as soon as may be after it is made.

8. Nitro-glycerine may be searched for in the same manner, under the same warrants, and subject to the same conditions in, under, and subject to which gunpowder may be searched for in pursuance of the Act of the Session of the twenty-third and twenty-fourth years of the reign of her present Majesty, chapter one hundred and thirty-nine; and all the provisions of the said Act relating to searching for gunpowder are hereby incorporated with this Act, and shall for the purposes of this Act be construed as if the word "gunpowder" in such provisions included nitro-glycerine as defined by this Act, and as if the Act therein referred to were this Act, and those provisions shall be construed to extend to nitro-glycerine imported or sold contrary to this Act.

REVIEWS.

Laboratory Teaching; or, Progressive Exercises in Practical Chemistry. By Charles Loudon Bloxam, Professor of Practical Chemistry in King's College, London, etc.

This book will be found to meet the requirements of a large class of students who, desiring to become acquainted with the means of applying chemical knowledge for detecting and distinguishing the various substances which pass through the hands of a chemist and druggist, or are likely to be presented to him for examination, have not yet had, and possibly may not be able to obtain, the advantage of lengthened instruction in a chemical laboratory. It does not presuppose any knowledge of chemistry on the part of the pupil, and does not enter into any theoretical speculations. It is therefore equally applicable to the old and to the new school of chemistry. In adopting this plan, it was, of course, necessary to avoid the use of symbolic notation. All the tests and other substances referred to are designated by their ordinary and generally their more popular names, and there is nothing throughout the book that will not be found to be perfectly intelligible to those who are beginning the study of chemistry, or to those who have acquired a smattering of the chemistry which is no longer in vogue. The matter is sufficiently elementary for the uninitiated, and yet it is much more comprehensive than other books of the kind. It contains a series of simple tables for the analysis of unknown substances of all kinds (not excepting organic bodies) which are known to be single substances and not mixtures. It also gives, what is very important to pharmaceutical students, a brief description of the physical characters and properties of the substances referred to, by which their identification may be facilitated. In addition to this, simple directions and illustrations are given relating to chemical manipulation, and this kind of matter is not collected into a separate chapter as it usually is, but is given just where the learner requires it in the operations which are described. The following table and note relating to the vegetable alkaloids will serve to indicate the sort of matter given, and the way in which it is arranged:—

163. IDENTIFICATION OF THE MORE FREQUENTLY OCCURRING VEGETABLE ALKALOIDS.*

Table O.

Dissolve the Substance in a small quantity of Water or of Dilute Hydrochloric Acid.

<table>
<tr><th colspan="2">1.</th><th>2.</th><th>3.</th><th>4.</th><th>5.</th></tr>
<tr><td colspan="2">To a part of the solution add <i>diluted</i> Potash, very carefully, till the solution is very slightly alkaline. Stir with a glass rod, and set aside. If no precipitate, see (164). If a precipitate is produced, add Potash in excess.</td><td rowspan="2">To another part of the solution, add, if necessary, Dilute Sulphuric Acid till slightly acid, and a saturated solution of Bicarbonate of Soda till the liquid no longer reddens blue litmus. Stir briskly with a glass rod, and set aside. If no precipitate, see column 3. If a precipitate is produced, see column 4.</td><td rowspan="2">Moisten some of the original solid, in a porcelain dish, with Strong Sulphuric Acid. Red colour indicates <i>Brucine</i> (166). Add a minute quantity of Bichromate of Potash on the end of a glass rod. Dark purple colour indicates <i>Strychnine</i> (167).</td><td rowspan="2">To another part of the original solution, add some strong Chlorine-water and Ammonia in excess. Green colour indicates <i>Quinine</i> (168). Orange-red colour indicates <i>Narcotine</i> (169).</td><td rowspan="2">To another part of the original solution add Ammonia in excess, and shake with Ether. Precipitate undissolved by the ether, probably <i>Cinchonine</i> (170).</td></tr>
<tr><td>Dissolved. <i>Morphine</i> (165).</td><td>Undissolved. See Column 2.</td></tr>
</table>

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* Heat a small portion of the substance in a small tube open at both ends.

If a *fine red liquid* is deposited on the sides of the tube, and the *remarkable odour* of quinoline (resembling that of *tar*) is perceived, either quinine or cinchonine is probably present (See table O, columns 4 and 5).

If a *very powerful odour of ammonia* is perceived, without much blackening, some base of animal origin, such as urea (182), may be suspected.

We give only one of the several notes which follow this table, namely, that relating to *Quinine*:—

"168. *Quinine* is a white crystalline powder, which is sparingly dissolved even by hot water, but dissolves easily in alcohol. Ether does not dissolve it so easily. Its solution is very bitter, and is alkaline to test-papers.

"If quinine be dissolved in diluted sulphuric acid, and the solution mixed with water and examined by daylight in a test-tube, it will be found to exhibit a very pretty shade of blue when in certain positions, though it appears quite colourless when held directly between the eye and the light.

"This *fluorescence* is very characteristic, and may be seen even in dilute solutions.

"*Sulphate* (or basic sulphate) *of quinine* forms very light silky needles, which are very bitter, and will not dissolve, even in boiling water, unless a little sulphuric or hydrochloric acid is added.

"If sulphate of quinine is adulterated with salicine, it assumes a red colour when moistened with strong sulphuric acid.

"To detect the presence of cinchonine, the sulphate is shaken in a test-tube (or small stoppered bottle) with ammonia and ether, when pure sulphate of quinine entirely dissolves, the solution separating into two layers; whilst any cinchonine, being insoluble in ether, separates on the surface of the lower (aqueous) layer."

The student who, taking this book as his guide, works out the examination of the immense number of substances of all sorts that are given as examples for practice, cannot fail in doing so, to acquire a very considerable practical knowledge of chemistry, which will form the best and soundest foundation for subsequent studies in this department of science.

AN INTRODUCTION TO THE ELEMENTS OF PHARMACY, OR THE "MINOR AND MAJOR EXAMINATIONS." A Guide to the Principal Points in Materia Medica, Botany, Chemistry, Pharmacy, Prescriptions, and Practical Dispensing. By F. HARWOOD LESCHER, Pereira Medallist. London: John Churchill and Sons, New Burlington Street. 1869.

It is with no ordinary pleasure that we welcome this new handbook of Pharmacy—the second that has appeared in the course of the present year from the same author—a former distinguished student of the Pharmaceutical Society, and a Pereira Medallist.

The author in his preface states that "the work is intended as a guide to the salient points in the six departments of study, and to act also as an aid to the remembrance of the main heads of what may have been the objects of a course of lectures; and, by exciting the interest of the student, to induce him to devote more time and attention to practical experiment and to serious study. Its aim may be given in two words—suggestions to the mind; assistance to the memory."

The six departments of study thus treated of as those generally read up during a curriculum of Pharmacy, are—Materia Medica, Botany, Chemistry, Pharmacy, Prescriptions, and Practical Dispensing. The essential character of the work is the columnar or tabular arrangement, and the subjects are treated of in the order as just placed. The author lays great stress upon the importance of a good knowledge of Materia Medica as the basis upon which to build up a sound scientific and practical educational structure. This subject is therefore treated of in the first place somewhat fully—under the following six heads:—1. Characteristics of the Pharmacopœia Materia Medica. 2. Articles of Matèria Medica, non-officinal. 3. Animal Materia Medica. 4. Medicinal Plants. 5. Groupings of the Geographical Sources of the Pharmacopœia Materia Medica. 6. Adulterations.

In order that our readers may form a clear estimate of the author's mode of arrangement, and of his powers of description and treatment, we will take an illustration from the "Characteristics of the Pharmacopœia Materia Medica," as follows:—

Natural Order, Name, and Geographical Source.	Characteristics.	Properties and Active Principle.
RANUNCULACEÆ. ACONITUM NAPELLUS. *Monkshood.* Europe. *Fr.* Aconit Napel.	ROOT—Tapering rapidly, with fibrils. *Colour*—EXT. coffee-coloured. INT. yellowish-brown. *Odour*—Faintly narcotic. *Taste*—Acrid; numbing. LEAVES—Large, much divided.	Narcotic; sedative; Aconitia.

In this part of the work we notice some omissions and errors, thus, *Illicium anisatum*, as one of the botanical sources of Oil of Anise, Oil of Juniper, Arnica, the Oils of Lavender, Rosemary, Peppermint, and Spearmint, together with the plants, etc., from which they are derived are not referred to here, which would have been their proper place, but afterwards amongst the Non-officinal articles of Materia Medica. No notice is given anywhere of Calabar Bean, Oil of Rue, and Indigo. The source of Savanilla Rhatany is incorrectly given as *Krameria triandra*, and such articles as Quassia wood from *Quassia amara*, ordinary East India Senna, etc., are not officinal, and are consequently wrongly treated of here. But with these exceptions and some few other errors of minor importance which we have noticed, and which can be easily rectified in a new edition, the author's descriptions, etc., are deserving of much praise for their clearness, terseness, and general accuracy.

A similar plan of arrangement, although necessarily modified according to circumstances, is adopted in treating of the other subjects; thus, BOTANY is divided into three heads, namely, Structural Botany, Classification, and Physiology; CHEMISTRY is treated of under five divisions, (1) Physics and Laws of Chemistry, (2) Simple Analysis, (3) Adulterations of Principal Chemicals and their Detection, and Tests for their Purity, (4) Poisons, (5) The Inorganic Chemicals; PHARMACY includes (1) Preparations of Pharmacopœia, (2) Organic Chemicals, (3) Proportions of Active Ingredients; PRESCRIPTIONS embraces (1) The Latin Language, (2) The Form of a Prescription, with Examples, (3) Prescriptions,—unusual or erroneous, (4) Posology; and PRACTICAL DISPENSING comprises (1) Hints on Practical Dispensing, (2) Aids to Dispensing, (3) Strength of Solutions, (4) Changes in Mixtures, with Examples of changes in mixtures in Prescriptions; and the whole work is concluded by an Index to Materia Medica.

A reference to the work will at once prove—that it is not a mere *cram book*, as might be feared from the number of subjects treated of in a limited space, but a well-arranged, systematic, and thoroughly digested volume—one, that cannot fail to be of great assistance to students when preparing for their examinations, or when attending systematic courses of lectures, by presenting them with a clear abstract of the heads of the subjects treated of. The work will also be of great use in refreshing the memory, when as necessarily happens in after life, from the pressure and toils of business, but few opportunities are afforded for systematic study.

To have produced two meritorious works in the space of a few months, amidst the distractions, anxieties, and toils of business, is no slight achievement, and we cordially congratulate our author upon the successful termination of his labours.

BOOK RECEIVED.

THE HALF-YEARLY ABSTRACT OF THE MEDICAL SCIENCES. January to June, 1869. London: John Churchill and Sons; Edinburgh: Maclachlan and Co.; Dublin: Fannin and Co. 1869.

CORRESPONDENCE.

QUALIFICATION *v.* REMUNERATION.

Sir,—I think the axiom that "if ignorance be bliss, 'tis folly to be wise," may with a certain amount of limitation be very aptly applied to a rather large number of chemists and druggists, who seem to be entirely at a loss to understand what material benefit can accrue from educating either themselves or any other members of the fraternity. They seem to consider that the necessary qualifications of an assistant consist merely in the ability to dispense, and perform the ordinary mechanical routine of the counter. As for the sciences of "Chemistry," "Botany," and "Materia Medica," they are of but minor importance in the estimation of these peculiar thinkers. They offer no encouragement to stimulate the young aspiring pharmaceutist to acquire knowledge whereby he is enabled to become a more useful member of the profession, but rather sear the expanding and plastic mind by discouraging and selfish remarks and actions. One would imagine that in a profession which bears such an amount of responsibilty as that of a chemist and druggist, qualification would be held in the highest esteem, and education promoted by every possible means. But to a large extent such is not the case, for I will venture to say, with all due respect to my brethren, that not one-third of the chemists and druggists in England are what their titles designate them to be. Indeed, I suppose they have about as much real and sound knowledge respecting the drugs and chemicals they deal in, as the customer who comes to buy them. Business, and nothing else but business, is the acme of their ambition, and knowledge is placed entirely in the background.

Probably if these individuals had been in Egypt with the children of Israel, they would rather have remained in bondage in preference to advancing to the land of promise. But as we are now under the thumb of the law, I trust narrow and detestable notions of this kind will gradually give place to more liberal and elevated principles.

I have been tempted to make the above remarks in consequence of having noticed, through various channels, that Assistants who have passed the Board of Examiners at Bloomsbury Square receive no more and often not so much remuneration as those Assistants who never trouble themselves about learning. I believe it is a well-known fact that the qualification required by the Board of Examiners gives the possessor no advantage whatever over his ignorant fellow-assistant in obtaining a situation; indeed, I imagine that I am not wrong in asserting that there are not a few houses which prefer unexamined to examined Assistants. Now why should this be the case? Surely there must be something at the root of all this, since in other professions a man is remunerated in proportion to his qualifications. But with us it is often more to the advantage of an examined Assistant seeking a situation to keep his qualifications a secret.

Perhaps some kind friend will give me some enlightenment upon the subject with your permission.

I remain, yours obediently,
PALMAM.

LIN. ACONITI AND LIN. BELLADONNÆ.

Dear Sir,—In reply to Mr. T. W. Gissing's questions as to the B. P. process for making Lin. Aconiti and Belladonnæ, I find 20 fluid ounces of rectified spirit sufficient to moisten the root in coarse powder, and after maceration, I displace first with 8 fluid ounces of rectified spirit, and then water. By this means I save about 10 fluid ounces of rectified spirit, without the slightest danger of any aqueous liquid passing through.

Yours truly,
A. P. S.

RICCALL, YORK,
July 21, 1869.

HOW TO GET AT A TRUE GRAMME WEIGHT.

Pharmaceutical attention being directed to the discussion of the relative merits of the French and English metrical systems, palpable misstatements should not be allowed to pass unnoticed. A franc weighs 5 grammes, so also does a sou, or 5 centime piece. Consequently the silver coin of 20 centimes and the bronze centime each weigh 1 gramme, and the decime or penny 10 grammes. That the French call a gramme a weight equal to 4 gros is absurd, a gros or drachm being equal to 4 grammes. The argument against the decimal system on the score of its being indivisible by 3 or the duodecimal series, falls to the ground when we recollect that it creates for itself the decim, the hundred, and the thousand, as commercial units instead of the dozen, gross, and its multiples. Who in France would think of ordering 12 gross of corks or bottles? As long as the present numerals exist, the decimal system must be naturally the best and simplest, and is in fact but a part of the universal system of notation. The conversion of English weights into metric and *vice versâ* can be done with mathematical precision by those who wish, but in general practice on the Continent a grain =0·05c, a drachm=4 grammes, an ounce=30 grammes, a pound=500 grammes, and a litre=32 ounces. The old French gros contained 72 grains, equal to 0·053. The German grain is of the same weight. The conversion should be always made proportionally as these quantities, otherwise the error would be too great.

I remain, gentlemen,
Yours,
E. J. T. A.

PARIS, *July* 14.

FOREIGN HONOURS.*

Sir,—Mr. Swift was admitted Pharmacien by the "School of Pharmacy," Paris, about the same time as Mr. W. Field. Mr. Swift as a Pharmacien of the first class, he having fully complied with all the necessary regulations, viz. in first taking his degree as "Bachelier-ès-Sciences," and then passing the whole of the examinations required by the School of Pharmacy.

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* See Pharm. Journ. June 1869, p. 724.

I enclose my card and remain,
Yours obediently,
La Lanterne.

Evasion of the Pharmacy Act.

Sir,—May I, through the medium of the Journal, be permitted to put a case which I cannot help regarding as an evasion of the Pharmacy Act, that it may be ventilated in your columns, and if thought at variance with the spirit of the Act, steps taken to prevent a recurrence of the same? I intentionally omit both name and place.

A person in the month of September, 1868, after the passing of the "Pharmacy Act," hires a shop, and later in the year opens it as a Chemist and Druggist—he advertises himself such by label, placard, and newspaper—in due course he is compelled to go before the Board of Examiners to pass the Modified Examination, and fails; but until pressure is brought to bear, he still usurps the title of Chemist, and carries on business as before. At last, finding himself amenable to the law, he transfers the business to a registered man living some thirty miles away, whose duties preclude his giving personal attention to the shop, which is conducted as before, the only difference being that it is carried on as —— and Co. Now if a registered man can thus carry on business many miles from his residence, and have an unqualified man *de facto* manager, of what practical utility is the Pharmacy Act? how many shops may a registered man have? and how will it in public estimation raise our professional status?

I am, Sir, yours obediently,
July 15, 1869. L.

A. E. J. (Norwich).—(1.) The constitution of emetic tartar is peculiar. The formula given is correct as to fact, but it might have had more of the character of a rational formula given to it by associating one of the seven atoms of oxygen with the Sb, for it might be assumed that SbO in this compound plays the part of a univalent radical. (2.) The constitution of the alkaloids is not sufficiently known to justify more speculative formulæ. (3.) The most simple method of representing subnitrate of bismuth is $BiNO_4$. (4.) There is certainly room for speculation. (5.) The formula is correct. (6.) The less we attempt to rationalise the formulæ, the better. (7.) The formula is wrong, and has been corrected. The compound is not sufficiently definite to justify a formula. (8.) At present it would be rather too speculative to do so.

J. F. should apply at Apothecaries' Hall.

J. S. T. W. S.—We know of no royal road to the knowledge required, and believe that nothing short of a regular systematic course of instruction would suffice for the purpose alluded to. Mere book knowledge would be of little use without practical work in the laboratory.

T. (Bury).—Soubeiran's 'Traité de Pharmacie,' and Dorvault's 'L'Officine.' Baillière, Regent Street.

R. G. M. (Richmond).—The subject of your communication is a very important one, but it is not thought desirable at the present time prominently to discuss it in our pages.

Ignoramus will find the information he requires in the back numbers of this Journal.

"*Cocking*"—*Soap Test.*—See Vol. XIV. p. 48.

E. C. (Leadenhall Street).—*Syrup of Phosphate of Iron, Quinine, and Strychnia.* Vol. X. (N. S.) p. 111.

Macstinger (Neath).—"The preparation of Concentrated Infusions."—The subject is fully discussed in the Fourteenth Volume of this Journal. See also Vol. I. (N. S.), pp. 5 and 7.

"*Pharmaceutist*" (Guildford).—The work in question is suitable, but it is not intended to supersede the use of the usual text-books.

"*Petitio Principii.*"—No. See the Regulations of the Board, published in the July number.

G. W. (Stony Stratford).—See the Regulations in the July number, page 18.

Erratum.—In our last number the proceedings of the Manchester Chemists' Association were, by an oversight, attributed to the Nottingham and Nottinghamshire Chemists' Association.

Communications for this Journal, and books for review, should be addressed to the Editor, 17, Bloomsbury Square. Those received after the 20th of the month cannot be noticed in the ensuing number.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to Elias Bremridge, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. Churchill, New Burlington Street, London, W.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. III.—SEPTEMBER, 1869.

THE ACT TO AMEND THE PHARMACY ACT OF 1868.

The Bill to amend the Pharmacy Act of 1868, of which notice was given by Lord Robert Montagu at the very commencement of the session, only arrived at maturity on the 11th ultimo, when, with a host of other bills, it received the Royal assent immediately before the prorogation of Parliament. It is printed elsewhere in our present Number, and will be read with satisfaction, we think, by all interested in the question.

Section 1 exempts from the action of the first fifteen sections of the Act of 1868, all persons already registered as legally qualified *medical practitioners*, and all who may hereafter be so registered, having passed an examination in pharmacy. It also declares that the said clauses shall not "prevent any person who is a member of the Royal College of Veterinary Surgeons of Great Britain, or holds a certificate in veterinary surgery from the Highland and Agricultural Society of Scotland, from dispensing medicines for animals under his care."

Section 2 removes the grievance under which assistants laboured as to the date of their period of service, and it is now declared sufficient to have been employed as an assistant to a pharmaceutical chemist or chemist and druggist in dispensing and compounding prescriptions for a period of three years at *any time* prior to July 31, 1868; this will entitle persons who have been so employed to be registered on passing the Modified examination. To ensure that privilege, however, they must make application on or before the 31st of December next, and in that matter they are placed exactly in the same condition, as to time, as those assistants were who secured their rights last year.

Section 3 is intended to remove certain ambiguity which some persons felt as to the construction of Section 17 of the Pharmacy Act, 1868, and is so important, that we repeat it here verbatim.

"*Nothing contained in Section* 17 *of the said recited Act shall apply to any medicine supplied by a legally qualified medical practitioner to his patient, or dispensed by any person registered under the said Act, provided such medicine be distinctly labelled with the name and address of the seller, and the ingredients thereof be entered, with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose.*"

Section 4 repeals Section 23 and Schedule E. of the Act of 1868; by the first, enabling persons to be registered as well under the "Medical Act" as under the "Pharmacy Act, 1868;" by the second, merely clearing the way for the new schedule containing the forms for assistants' applications.

Section 5 amends Schedule F. of 1868, by adding the *address* to the *name* of the purchaser in the second column of the register to be kept of the sale of poisons.

Such, then, are the provisions of the new Act, and it will be seen at a glance that all of them tend to restore the Act of 1868 to the form in which it was originally proposed by the Pharmaceutical Society. So far as the medical profession is concerned, it is a virtual restoration of the words "*medical practitioner*" *vice* the word "*apothecary*" substituted for them in the House of Commons last year. The exemption of the members of the Royal College of Veterinary Surgeons, is but a repetition of the exemption in the old Clause 16, and the addition of the holders of certificates from the Highland and Agricultural Society of Scotland, is but a necessary extension for Scotland, where such persons are numerous, and about whose qualifications there is no doubt.

Of the relief to assistants, few will dispute the justice, as it was absurd to suppose that an accidental absence from retail establishments during any portion of the three years immediately preceding the 31st of July, 1868, should disqualify a man who had perhaps served twice the required time previously dispensing as the Act requires; moreover, the introduction of that word "*immediately*" was an extension of the Act of which no one could ever trace the origin.

The third section is by far the most important of all. It contains no change, but a very clear and concise rendering of the regulations to be observed in *dispensing* as distinguished from *ordinary selling*, and it may not be uninteresting to trace its progress. Dr. Brewer imagined that any mixture containing a poison as one of its ingredients, however minute in quantity, could not be legally sent out without bearing on its label "*the name of the article and the word poison*," notwithstanding the mixture might have been prescribed by a physician, and might be properly directed as to instructions for use. Section 17 is a very long one, having been added to in many points, by many hands, in the House of Commons, and it is perhaps difficult to go from end to end of it with a clear conception of its requirements and exemptions; nevertheless a careful consideration will show that the doctor's opinion was erroneous. We need not tire our readers here by arguing this point, the more especially as the amendment sets the question at rest completely, and we are thankful to Dr. Brewer for giving so good an opportunity of removing all ambiguity. His proposed amendment was in these words:—

"Nothing contained in Section 17 of the said recited Act shall apply to any medicine dispensed *under the prescription in writing of any legally qualified medical practitioner*, provided such medicine be dispensed by any person qualified according to the provisions of the said Act, and be distinctly labelled with the name and address of the seller, and the ingredients thereof be entered, with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose."

To this exemption, on the face of it, there seemed little or no objection, but that it would throw doubt on the exemption already provided in Section 17 for *all* medicines dispensed by persons registered under the Pharmacy Act, as well those for which the written prescription of a legally qualified medical practitioner was in the hands of the dispenser as others.

Those who are practically engaged in compounding medicines must be perfectly aware of the mischief which would have arisen from such a one-sided amendment. To say nothing of the compounds daily put together from "family recipes," copies of prescriptions, and even verbal instructions, it would be sufficient to point out the difficulty of identifying the prescription of a "legally qualified medical practitioner." Physicians by common custom only sign their initials, and many prescribers do not sign at all.

These reasons were sufficient for the Peers, who usually consider such matters calmly, and in a business-like manner, and the Bill was accordingly returned to the Commons with the third section erased. To this erasure the Commons objected,

"*Because it is just that qualified medical practitioners should be exempted from the provisions of the* 17*th Section of the recited Act, under the conditions of the said clause;*"

and the Lords then agreed to restore it, with alterations, cutting out all mention of prescriptions, and bringing it to its present form. In this form it effectually removes the possibility of any mistake as to the requirements of the law. Dr. Brewer's fear was, that a mixture prescribed by a legally qualified medical practitioner might be marked "Poison," etc., and thereby alarm the patient. But he forgot—presuming this extraordinary reading of Section 17 to be correct—that the dispenser must have certain knowledge of the genuineness of the prescription and of the qualification of the prescriber, to justify him in departing from this mode of labelling, and that he would be daily exposed to penalties in the ordinary exercise of his business. Our present Journal contains an example of this danger in an account of a case at Worthing, in which a prescription, duly signed with initials as by a physician, giving the name of the patient, and to all appearance genuine, turned out to be a forgery, and the chemist who dispensed it was put in peril thereby. Surely the honourable member for Colchester must see how greatly improved his amendment has been by the House of Lords!

CONVICTION OF A DRUGGIST FOR DISPENSING POISON WITHOUT A POISON LABEL.

At page 162 of the present number will be found a report of proceedings before the Worthing magistrates, in which a charge was preferred against a druggist, first, for unlawfully selling poison to a stranger, and secondly, for selling poison in a bottle not having a poison label attached to it. The case is briefly referred to in the concluding paragraph of the preceding article, but when that article was written the magistrate's decision had not been given; indeed, the result, which has greatly astonished us, only came to hand as we were going to press.

In addition to the particulars given in the report above alluded to, we may add the following. On Wednesday, the 11th of August, a young man of respectable appearance, went in a fly to the shop of a druggist in Worthing, where he was not known, and presented a prescription of which the following is a copy, to be dispensed:—

℞ Acid. Hydrocyan. "Scheeles" ʒij
Aq. Rosæ ℥ij
M. ft. Lotio, ter die applicand.

R. M. L.

Mrs. Newton,

The medicine was prepared according to the prescription, in an angular bottle, to which a coloured label with the words "CAUTION—FOR EXTERNAL USE," and the name and address of the druggist, was attached; and the prescription was copied in a book kept for that purpose. Mr. Berry, the druggist, had thus fulfilled all that the Act of Parliament requires in dispensing medicines, according to the interpretation hitherto put upon the wording of the 17th section of the Act. It is there stated as follows:—"Nor shall any of the provisions of this section apply to any medicine supplied by a legally qualified apothecary to his patient, *nor apply to any article when forming part of the ingredients of any medicine dispensed by a person registered under this Act, provided such medicine be labelled in the manner aforesaid with the name and address of the seller, and the ingredients thereof be entered, with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose.*" If there could be any doubt here as to the meaning of the words "labelled in the manner aforesaid," that has since been removed by the "Pharmacy Amendment Act," which, by a singular coincidence, received the royal assent on the very day the above transaction occurred.

We think the magistrates are clearly wrong in the decision they have come to, and as the case is one of very great importance to every chemist and druggist throughout the country, and to the medical profession, we hope that no time will be lost in appealing to a higher tribunal, and that any assistance that may be required will be afforded to Mr. Berry in asserting and supporting the rights of himself and his brethren.

It was never contemplated, and indeed it would be highly objectionable, that medicines dispensed from prescriptions, whenever they contain as an ingredient one of the articles included in the schedule of poisons, should be subjected to all the regulations relating to the sale of poisons. The part of section 17 which we have quoted, was intended to obviate such a result, and the Amendment Act renders it more clear than does the Act itself what the intention of the Legislature was in this respect.

THE PRELIMINARY EXAMINATION.

We are glad to observe that the Council and Board of Examiners are alive to the necessity of maintaining all the examinations of the Pharmaceutical Society on firm and well-defined bases. It is right they should be so fixed, and this year of 1869, which has been called by many "the commencement of a new era in Pharmacy," is the proper occasion for whatever adjustment may be required. The 'Pall Mall Gazette,' in commending Pharmacy (not Pharmacists) to the ladies, says, "*The business of Pharmaceutical Chemist and Druggist must, under the new Act, be held to rank next to the learned professions.*" Of course we must look to those who have the ordering of the qualification to see that individuals engaged in that business do not fall short of the proper standard. In our last number we published the regulations adopted by the Council, at their July meeting, on the recommendation of the Board of Examiners, for conducting the first or Preliminary examination. We found that some discussion had taken place in the Council as to the persons proper to examine candidates, residing more than ten miles from London, who could not conveniently present themselves at Bloomsbury Square. That discussion, as evidenced by the division reported, was caused by a desire, on the part of the Council, to secure something like uniformity in the examinations, at least so far as there could be uniformity in an examination conducted by a diversity of examiners, the subjects only being given by the Council.

The same desire for uniformity seems since that time to have worked more strongly on the Board of Examiners, and on their recommendation at the last meeting of Council, it was resolved to rescind the former regulations, and virtually to make the preliminary a written instead of a *vivâ-voce* examination. Not the subjects only, but the actual questions are to be set by the Board, and the answers thereto having been written by the candidates, in a given time under proper supervision, are to be forwarded to, and estimated by the Board. We presume, as this ordeal is to test the *general*, and not the *technical* education of a youth, that the certificates heretofore recognized, of certain duly constituted examining boards, will still be received, but for lads who do not possess such certificates we think the new proposition a good one. Too much importance can scarcely be attached to the early education of apprentices, and we hope to see the day when no chemist will sign articles with a youth who has not previously passed the Preliminary Examination of the Pharmaceutical Society.

On one point we would venture to offer a word of advice to the Council. The distance from London which is to exempt a candidate from personal attendance at Bloomsbury Square is put down as ten miles. Surely in these days of rapid and inexpensive travelling there can be no difficulty to a parent in sending his son ten or even twenty miles for the purpose of passing an examination on which so much in his future career may depend. The same remark applies to the provinces. It is of the utmost importance to intrust the superintendence of these proceedings to men of high standing in their districts; by such a precaution only will these examinations, however little the superintendents may be concerned in them actually, retain their proper value in public estimation.

THE PHARMACEUTICAL CONFERENCE.

The meeting of the Conference at Exeter has proved in every way a satisfactory one. The attendance has been about equal to that at former gatherings of a similar sort, and the matter which has come under discussion has been both abundant and interesting. These meetings are obviously calculated to do a great amount of good, and the cordial reception given to the members from year to year in the different parts of the country visited shows how generally the objects of the Conference are appreciated. The bringing together of men who are engaged in similar occupations, and inducing them to discuss topics of common interest in connection with their trade or professional pursuits is an important step towards the improvement of their relations to each other and to the public. Meetings of this description have long been established among chemists and druggists in the metropolis and in many provincial towns, but it remained for the Pharmaceutical Conference to bring the metropolis into closer communion with the provinces and the provinces into closer communion with each other. That this important service is being satisfactorily performed by the Conference their proceedings at Exeter, a report of which will be found in another part of this Journal, affords ample evidence. Our readers will be glad to learn that they may confidently look forward for the appearance, at no distant period, of a 'Year-Book of Pharmacy' as one of the fruits of the Conference.

THE. ANNUAL INTERNATIONAL EXHIBITION.

The unparalleled success which attended the Great Exhibition of 1851 induced a belief that it was the precursor of a long succession of similar displays, and although this may not be fully realized, yet springing from the tangible results of that first attempt of the sort in this country, we are now promised a modified reproduction of it as an annual exhibition. The Royal Commissioners, who are the guardians of the large fund which has accumulated from the profits of the Exhibition of 1851, have announced the first of this series of annual exhibitions which is to be confined to selected works of fine and industrial art. The conditions under which this Exhibition is to take place are fully explained in a notice which will be found in another part of this Journal. It will be especially noticed that there will be no prizes, but a certificate for having obtained the distinction of admission to the Exhibition will be given to each exhibitor.

NITRO-GLYCERINE.

The Bill to prohibit the importation, and to restrict and regulate the manufacture, sale, and carriage, of nitro-glycerine,—a copy of which was inserted in our last number,—was, with some rather important modifications, passed at the end of the Session, on the 11th of August. The title of the Act remains as it stood in the Bill, "to prohibit *for a limited period*," etc., but the section limiting the time during which the Act shall remain in force has been struck out. Other minor alterations have been made, but not, however, materially affecting the provisions of the Act. We are unable from press of matter to insert the Act this month, but will do so in our next number.

THE ADULTERATION OF SEEDS ACT, 1869.

This Act, which, like that last noticed, received the royal assent on the 11th of August, is intended for the protection of agriculturists against the practice of supplying seeds, such as clover and other grass seeds, for use in agriculture, which have been fraudulently adulterated by processes which appear to have been extensively adopted. There are many seeds which so far resemble each other in appearance that to ordinary observers they may pass for the same sort, and others which differ only in colour, yet these seeds may yield plants which are widely different. The farmer, therefore, in purchasing seeds for sowing on his land, may have two or more sorts mixed together which he cannot distinguish until they have germinated and grown into plants. The fraudulent dealer who supplies him with adulterated seeds, in order to elude detection, destroys the germinating power, and sometimes also alters the colour of the seeds used for adulteration, and it is these practices that are rendered punishable by the Adulteration of Seeds Act. The Act specifies that "every person who, with intent to defraud, or to enable another person to defraud, does any of the following things: that is to say, (1) kills or causes to be killed any seeds; or (2) dyes or causes to be dyed any seeds; or (3) sells or causes to be sold any killed or dyed seeds, shall be punishable as follows: that is to say, (1) for the first offence he shall be liable to a penalty not exceeding five pounds; (2) for the second and any subsequent offence, he shall be liable to pay a penalty not exceeding fifty pounds." The Court may also order the name of the offender and the offence of which he has been found guilty to be advertised at his expense.

TRANSACTIONS

OF

THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *August 4th*, 1869,

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

Present—Messrs. Abraham, Bottle, Bourdas, Carteighe, Edwards, Haselden, Hills, Morson, Randall, Savage, Squire, and Williams.

The minutes of the previous meeting were read and confirmed.

The report of the Finance and House Committee was presented, showing on the General Fund account a balance in the Treasurer's hand of £1345. 15*s*. 9*d*., and submitting for payment accounts, commission, and various items amounting to £362. 3*s*. 0*d*., and on the Benevolent Fund account a balance of £405. 7*s*. 10*d*.

Resolved,—That the report be received and adopted, and payments made.

The report of the Library, Museum, and Laboratory Committee was received and adopted.

Letters from the Privy Council were read, intimating that Dr. Edward Headlam Greenhow had been appointed to be present, from time to time, on behalf of the Privy Council, during the progress of such of the Examinations of the Society as are held in London; and that Dr. Christison had been similarly appointed to attend the Examinations held in Scotland.

The Board of Examiners for England and Wales reported that during the previous month they had examined 188 Candidates, and passed 148; and that Dr. Greenhow had attended at their Examinations on the 21st, 23rd, and 29th of July; that eight candidates presented themselves for the Junior Bell Memorial Scholarship, and one for the Senior Scholarship.

On the report of the Board, and examination of the testimonials as to character, etc., of the respective candidates, it was

> Resolved—That the Junior Bell Scholarship be awarded to Charles Fryer, of Guildford, and the Senior to William Foster, of Bridlington, with free laboratory instruction for the Session 1869–70.

The Board reported, that, during the past Session, fifty-eight candidates had passed the Minor Examinations in honours, of whom nineteen had competed for the Prize of Books.

On the report and recommendation of the Board, the prize was awarded to John William Gilbert Candy.

The Board of Examiners recommend that, taking into consideration the difficulty of uniformly selecting suitable Examiners in the country to conduct the First or Preliminary Examination, the anxiety and time the proposed arrangements would necessarily entail on the Council and Society's Staff, together with the questionable power of the Council to make such appointments satisfactorily, it would be desirable for the Board to set the questions and examine the answers, and that there should be four examinations in the year, viz. in January, April, July, and October.

In the case of Candidates residing in the country, and unable to attend at Bloomsbury Square, the Secretary shall send the Questions, under seal, to the person appointed to superintend the writing of the Answers, with instructions that they be opened by him in the presence of the Candidate, who shall write the answers forthwith in his presence in a given time; the answers to be forwarded, under cover to the Secretary, by the following post, accompanied by the Superintendent's Certificate to the effect *that they were written in the time specified, under his supervision, and without assistance from books or other sources.*

It was therefore moved by Mr. Carteighe, seconded by Mr. Williams, and
Resolved,—That the resolution passed at the Meeting of Council on the 7th ult., in reference to this Examination, be rescinded.

It was moved by Mr. Abrahams, seconded by Mr Edwards, and
Resolved,—That the recommendation of the Board of Examiners, respecting the mode of conducting the First or Preliminary Examination be adopted, but that the frequency of the Examinations be left to their discretion.

The Board of Examiners for Scotland reported, that during the month of July, they had examined twenty candidates, and passed seventeen.

SESSIONAL PRIZES.

The Professors presented their respective Reports of the results of the competition for the Sessional prizes offered by the Council, which, having been read, the following awards were declared:—

CHEMISTRY AND PHARMACY.

BRONZE COUNCIL MEDAL...	John Ingham.
CERTIFICATE OF HONOUR...	Edward Alfred Webb.
CERTIFICATE OF MERIT......	Joseph Elijah Barnes.

BOTANY AND MATERIA MEDICA.

BRONZE COUNCIL MEDAL...	Walter Henry Smith.
CERTIFICATE OF HONOUR...	John Ingham.
CERTIFICATE OF MERIT......	Frederick Beasley.

PRACTICAL CHEMISTRY.

BRONZE COUNCIL MEDAL...	John Ingham.
CERTIFICATE OF HONOUR...	George Iredale.
CERTIFICATES OF MERIT	Joseph Hicking, William Wyley, and Edward Histed.

The Professor of Botany reported that five Herbaria had been received in competition for the Botanical Prize.

The following awards were made:—

SILVER MEDAL...............	Henry Williams Jones.
BRONZE MEDAL...............	George Frederick Stoodley.
CERTIFICATE OF HONOUR...	Ralph Tait Linton.

It was moved by Mr. Bottle, seconded by Mr. Savage, and
Resolved,—That the Annual Report of the Council be sent to every Member of the Society at least three days prior to the day appointed for the Annual Meeting.

It was moved by Mr. Bottle, seconded by Mr. Squire, and
Resolved,—That the Parliamentary Committee be requested to take cognizance of all cases of infringement of the Pharmacy Acts of 1852 and 1868, and report to the Council thereon.

Mr. Hills withdrew the Motion of which he had given notice last month, respecting the International Pharmaceutical Congress.

Mr. Abraham gave notice that at the October Meeting of the Council he would propose that steps be taken to assimilate the laws which regulate the practice of pharmacy in Ireland and Great Britain respectively.

The under-mentioned Pharmaceutical Chemist was elected a—

MEMBER.

Greaves, William Samuel, Ironville.

The following Chemists and Druggists, registered under the "Pharmacy Act, 1868," were elected—

MEMBERS.

TOWN.	CHRISTIAN & SURNAME.	TOWN.	CHRISTIAN & SURNAME.
Aberdare	Evans, Thos. Whitty.	Menai Bridge . .	Jones, John Walter.
Bath	Marsh, John Hoskins.	Stourbridge . . .	Burgess, William.
Eton	Bingham, Wm. Hill.	Walsall	Elliott, George.
Exmouth	Teed, David.	Wellington . . .	Windeatt, George Jno.
Flint	Jones, Michael.	Welshpool . . .	Benson, George Wm.
Hereford	Seward, William.	Whitby	Stevenson, John.
Knaresborough . .	Tyas, William Henry.	Worcester . . .	George, Henry.
Leek	Johnson, William.	" . . .	Welch, Thomas Kemp.
Little	Whitworth, James.		

LONDON.

Brooks, William Hutchings, 1, King David Lane, Shadwell.

Pond, George Peter, 68, Fleet Street.

Sheppard, Alfred, 51, Hollywood Road, West Brompton.

The following were elected—

ASSOCIATES.

Airey, George, Wigan.
Beetham, William C., Cheltenham.
Cooling, William John, Newark-upon-Trent.
Entwisle, John Bell, Liverpool.
Gee, David Gillam, Whitehaven.
Gee, Stacey Thomas, Whitehaven.
Grimditch, William James, Hove.
Holmes, Jasper Clement, London.
Jewell, Robert Joseph, London.
Lewin, John Harrie Stockwell, Brighton.
Mills, John, Uppingham.
Palmer, William Francis, Nottingham.
Pitts, Phineas Reynolds, Hingham.
Robson, James Crosby, Darlington.
Scholes, Frederick Darfield, Sheffield.
Scrase, Richard, Hammersmith.
Senior, William Furber, Doncaster.
Spiers, William, London.
Squire, Alfred Herbert, London.
Stooke, Arthur, Clevedon.
Thompson, John T., Richmond, Yorkshire.
Usher, John, Newcastle-on-Tyne.
White, Tom M'Call, Wigton.
Wilson, John Jackson, Bolton.
Woodcock, William Henry, Lincoln.
Wright, Arthur, Lowestoft.

EXAMINATION IN LONDON.

July 29th, 1869.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Evans, Gale, Garle, and Haselden.

Twenty-four candidates presented themselves for the Major and Minor Examinations; the following fifteen passed, and were duly registered:—

MAJOR (as Pharmaceutical Chemists).

Paine, Charles, Usk.
Jones, Frederick William, London.

MINOR (as Chemists and Druggists).

*Curtis, Charles, Melbourne.
*Hairsine, William, Hull. } Equal.
*Poths, Hermann, London. } Equal.
*Sequeira, Eduardo Candido, Rio Grande do Sul.
*Squire, Frank Robert, Spalding.
Robertson, Frederick Freer Leslie, London.
Bonnett, Frederick, Bridgend.
Haas, Louis, London.
Moore, John, Blackpool.
Chaplin, James William, Tottenham.
Smith, Fuller, King's Lynn.
Mills, John, Uppingham.
Snow, William, St. Alban's.

The above names are arranged in order of merit.

ERRATUM.—August, p. 60, Andrew Dickson Reid should have been marked as having passed the Minor Examination in honours, at Edinburgh, instead of John P. Gorrie.

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* Passed in honours; eligible to compete for the Prize of Books.

REGISTERED APPRENTICES AND STUDENTS.

NAME.	ADDRESS.	
Carson, Robert	Messrs. Mottershead and Co.	Manchester.
Gadd, Charles Frederick	Mr. Kemp	Horncastle.
Gregory, Robert Nixon	Mr. Garside	Ormskirk.
Lewis, Edwin Alaric		London.
Payne, Edward Stanning	Messrs. Wooldridge & Grisbrook	Windsor.
Stephens, Henry Isaac	Mr. Lacey	Bristol.

PROVINCIAL TRANSACTIONS.

BBADFORD CHEMISTS' ASSOCIATION.

A quarterly meeting of the Members of the above Association was held in the Freemasons' Rooms, Salem Square, on Friday evening, the 6th of August,

The attendance, from some unassignable reason, was very meagre.

In the absence of the President, the chair was taken by the Vice-President, Mr. F. M. RIMMINGTON, at whose request the Secretary, Mr. H. G. ROGERSON, read a letter he had received from one of the secretaries of the British Pharmaceutical Conference, Mr. Reynolds, of Leeds, inviting the Association to nominate delegates to represent it at the ensuing Conference; more especially urging the important subject of pharmaceutical education which would be considered on that occasion, and the desirability of learning the opinions of gentlemen knowing the requirements of particular districts.

Mr. J. HICK proposed, and Mr. FRANCIS BELL seconded, that Mr. Rimmington represent the Bradford Chemists' Association at the ensuing Conference.

On the motion being carried, Mr. Rimmington assented to his appointment as delegate of the Society.

The Secretary produced a very compact and neatly-fitted cabinet of 200 specimens of articles of materia medica, etc., the gift to the Society of Messrs. Evans, Sons, and Co., of Liverpool, to whom the thanks of the meeting, after being proposed by Mr. HICKS and seconded by Mr. NEWSHOLME, were unanimously accorded.

LIVERPOOL CHEMISTS' ASSOCIATION.

On the 27th of July an excursion to Chester was organized by the members of this Association. At Chester the party inspected the lead works of Messrs. Walker, Parker, and Co.; the processes of making shot, white lead, and lead-piping were examined with interest. In the granulation of lead for shot, about 2 per cent. of arsenic is added. The compound, when heated red-hot for three hours, is allowed to fall into a reservoir of water from a height of 10 to 150 feet, according to the size of the shot required. After luncheon the party proceeded up the river Dee to Eaton Hall, and on their return sat down to an excellent dinner. The President of the Association, Mr. ROBINSON, officiated as chairman. After the usual toasts the party returned to Liverpool, having enjoyed a most delightful trip.

THE LEICESTER CHEMISTS' ASSISTANTS' AND APPRENTICES' ASSOCIATION.

The half-yearly meesting of the members of the above Society was held in the rooms of the Association on Thursday, the 5th ultimo; Mr. H. COOPER, Vice-President, in the chair.

The official report of the committee was read by the Honorary Secretary (Mr. W. B. Clark), showing the very satisfactory balance in the hands of the Treasurer.

The thanks of the committee having been tendered to the readers of the various weekly papers, and to the lecturers of their respective classes for their disinterested services, the following gentlemen were then duly elected as the committee for the ensuing half-year:—Mr. Jos. Young, President; Mr. H. Cooper, Vice-President; Mr. W. B. Clarke, Honorary-Secretary; Messrs. Blunt, Butler, Miller, and Smith.

BRITISH PHARMACEUTICAL CONFERENCE.

SIXTH ANNUAL MEETING, EXETER, 1869.

The sittings of the British Pharmaceutical Conference have this year been held at the College Hall, Exeter, under the Presidency of Daniel Hanbury, F.R.S., on the mornings and afternoons of Tuesday, August 17th, and Wednesday, August 18th. Twenty papers were read, and one hundred and eleven new members elected. The following delegates were present:—Mr. Commans, from the Bath Chemists' Association; the President (Mr. Reynolds) and Secretary (Mr. Yewdall), from the Leeds Chemists' Association; Mr. Brady, from the Newcastle Chemical Society; Messrs. Beynon and Martindale, from the Chemists' Assistants' Association; and Messrs. Lake and Tanner, from the Exeter Chemists' Association. Communications were received from the North British Branch of the Pharmaceutical Society, and from the Associations of Birmingham, Lincoln, Manchester, Dundee, Halifax, Bradford, and Liverpool.

Among the members present were Messrs. Hanbury, London; Cooper, Exeter; J. Palk, Exeter; Evans, London; Reynolds, Leeds; Brady, Newcastle; Brough, Kensington; Ince, London; Husband, Exeter; Stoddart, Bristol; Schacht, Clifton; Savage, Brighton; Groves, Weymouth; Carteighe, London; Wright, London; Francis, London; Guyer, Torquay; Balkwill, Plymouth; Commans, Bath; Bremridge, London; Taylor, Oxford; Knapman, Exeter; Napier, Exeter; Walton, Exeter; Moody, Exeter; W. Palk, Exeter; Manby, Southampton; Heard, Exeter; Mear, Bristol; Narracott, Torquay; Yewdall, Leeds; Payne, Wallingford; Attfield, London; Martindale, London; Collier, Reading; Hatch, Bristol; Bevans, San Francisco; Martin, Bristol; Radford, Devonport; Kirkpatrick, Taunton; Grainger, London; Batting, Wokingham; Williamson, Guildford; Hibbard, Exeter; Greenish, London; Andrews, London; Morson, London; Westrupp, London; Coles, London; Robbins, London; Dowling, Exeter; Matthews, London; Christopher, Crickhowell; Barnett, Bath; Beynon, London; Hills, London; Archer, Edinburgh; Calvert, Manchester; Pedler, London.

On Thursday, August 19th, the members were entertained at dinner by the chemists of Exeter. On Friday, the chemists of Torquay invited between sixty and seventy members and ladies to a carriage excursion to Watcombe Bay, Babbicombe Bay (where luncheon was provided), Anstey's Cove, Kent's Cavern, and other places, and gave their visitors a dinner in the evening.

The first sitting commenced at 10 a.m. on Tuesday morning. The gentlemen whose names are appended were elected at this or subsequent sittings.

Andrews, Mr. C., Bombay.
Anness, Mr. S. R., Ipswich.
Amison, Dr. W. C., College of Medicine, Newcastle.
Atkinson, Mr. R. M., Hunslet Lane, Leeds.
Ball, Mr. G., 189, High St., Deptford, S.E.
Barber, Mr. G., Liverpool.
Barr, Mr. R., Gourock.
Barton, Mr. H., 77, King's Rd., Brighton.
Batting, Mr. T. G., Wokingham.
Beach, Mr. J., Bridport.
Bell, Mr. F., Bradford, Yorkshire.
Bell, Mr. G., Market Place, Hexham.
Bevans, Mr. J., 3, Premier Place, Mount Radford, Exeter.
Bingley, Mr. J., Northampton.
Boucher, Mr. J., Union Street, Bristol.
Bourne, Mr. C., Union Street, Bristol.
Bowman, Mr. H., Washington, near Newcastle-on-Tyne.
Brayshay, Mr. T., Stockton-on-Tees.
Brayshay, Mr. W. B., Stockton-on-Tees.
Brockett, Mr. R. H., 41, Northumberland Street, Newcastle-on-Tyne.
Broom, Mr. W., 2, Queen St., Exeter.
Brown, Mr. J., Ampthill.
Brown, Mr. T., Irongate, Glasgow.
Callaway, Mr. L., Ipswich.
Calvert, Dr. F. C., F.R.S., Bradford, Manchester.

Chessall, Mr. R., Sidmouth.
Clarke, Mr. G. B., Park Street, Woburn.
Cleeve, Mr. W., Chudleigh.
Coles, Mr. C., 1. King's College Road, Hampstead, N.W.
Collier, Mr. W. L., Friar St., Reading.
Collins, Mr J., 17, Bloomsbury Sq., W.C.
Cooper, Mr. J. N., Mall, Clifton.
Cornell, Mr. W., Ipswich.
Cottrill, Mr. G. J., Shepton Mallet.
Cottrill, Mr. J. W., New Bond St., W.
Craig, Mr. C., Anne Street, Sunderland.
Curtis, Mr. W., Barnstaple.
Davies, E., F.C.S., Royal Institution, Liverpool.
Dowsets, Mr. A., 16, North St., Brighton.
Dyer, Mr. A. J., Acre Lane, Brighton.
Eyre, Mr. A. B., Ipswich.
Francis, Mr. G., Great Malvern.
Franklin, Mr. A., Great Malvern.
Fudge, Mr. C. W., Shepton Mallett.
Gadd, Mr. H., Plymouth.
Garder, Mr. J. T., St. James St., Brighton.
George, Mr. H., Broad St., Worcester.
Glaisyer, Mr. T., 11, North St., Brighton.
Godfrey, Mr. F., Newton Abbot.
Good, Mr. T., 47, Minories, London.
Greenish, Mr. T. E., 20, New Street, Dorset Square, W.
Greig, Mr. W., jun., Glassford St., Glasgow.
Hare, Mr. W., 8, Paris Street, Exeter.
Harrison, Mr. W. B., 6, Bridge Street, Sunderland.
Hatch, Mr. R. M., Redland, Bristol.
Heald, Mr. B., Sleaford.
Holliday, Mr. T., West Bromwich.
Hume, Mr. A., Grey Street, Newcastle-on-Tyne.
Hunt, Mr. C., 29, Chapel Street, Belgrave Square, W.
Hunt, Mr. J., Exmouth St., Clerkenwell.
Jenner, Mr. C. S., Bury St. Edmund's.
Kay, Mr. R., 7, Strand, Dawlish.
Kemp, Mr. J., 11, North St., Brighton.
Kennedy, Mr. W., Trongate, Glasgow.
Kernot, Mr., Poplar, E.
Kitchin, Mr. A., Kings St., Whitehaven.
Le Feuvre, Mr. F., Bath St., Jersey.
Lockyer, Mr. G., High St., Deptford, S.E.
Loveland, Mr. C., High Wycombe.
Lyon, Mr. R., Ipswich.
Manning, Mr. T. D., Yeovil.
Marchant, Mr. C. F., Ipswich.
Martin, Mr. N. H., Clapham Common.
Martindale, Mr. W., University College Hospital, W.C.
Meggs, Mr. T. C., Yeovil.
Merson, Mr., jun., Paignton.
Merrell, Mr. J., Queen's Terrace, Camden Road, N.
Millar, Mr., Torquay.
Mortimer, Mr. J., Mall, Clifton.
Narracott, Mr. H., Torquay.
Nesbit, Mr. J., 172, High St., Portobello.
Nicholson, Mr. A., Pantiles, Tunbridge Wells.
Nicholson, M. J. J., High St., Sunderland.
Orchard, Mr., Salisbury.
Payne, Mr. A., Galen Chemical Works, Ettingshall, near Wolverhampton.
Prince, Mr. H., 5, Fore St., Taunton.
Radford, Mr. J. C., 56, Fore Street, Devonport.
Read, Mr., Salisbury.
Riddell, Mr. W., Market Place Hexham.
Robinson, Mr. A. F., 2, Northgate, Darlington.
Rogers, Mr. W. H., Colyton.
Sharp, Mr. D. B., Borough Road, Sunderland.
Shephard, Mr. T. F., 37, All Saints' Road, Westbourne Park, W.
Simpson, Mr., 52, North Bridge, Edinburgh.
Simpson, Mr. A. L., Stowmarket.
Sinclair, Mr. G., 29, Portland St., Glasgow.
Smith, Mr. T., Heriot Hill House, Edinburgh.
Smith, Mr. W., 3, Celbridge Place, Bayswater, W.
Sprackett, Mr. G., The Drawbridge, Bristol.
Stott, Mr. W., Sowerby Bridge.
Teed, Mr. D., Exmouth.
Temperly, Mr. T., 107, Pilgrim Street, Newcastle-on-Tyne.
Thrower, Mr. E. A., Diss.
Tollinton, Mr. R. B., York.
Townsend, Mr. C., Union Street, Bristol.
Trotman, Mr. A. C., 16, Cambridge Street, Hyde Park, W.
Turney, Mr. S. P., Plymouth.
Warner, Mr., Mall, Clifton.
Welch, Mr. T., 29, Mosley Street, Newcastle-on-Tyne.
West, Mr. E. T., 17, Strand, Dawlish.
Westrup, Mr. J., 76, Kensington Park Road, W.
Williams, Mr. H. W., Barmouth.
Williams, Mr. P., Horsham.
Williams, Mr. R. W., Dolgelly.
Williamson, Mr. D., Guildford.
Worts, Mr. A., Harwich.
Wright, Mr. W. V., Southwark Street, S.E.

Professor **Attfield** read the following:—

"REPORT OF THE EXECUTIVE COMMITTEE.

"The President and Executive Committee have again to congratulate the members on the continued prosperity of the British Pharmaceutical Conference. At the last annual meeting the numbers enrolled amounted to 562, they now reach 647. From the statement of the Treasurer, it will be seen that the income is in excess of the expenditure by £80.

"During the past year your Committee has deliberated on the important question as to whether or not the compilation and issue by the Conference of a 'Year-Book,' or 'Annual Report on the Progress of Pharmacy,' would be desirable and practicable. Similar works in connection with various sciences are published in most of the countries of Europe and in the United States, and are found to promote the advancement of knowledge, and to be highly useful to those amongst whom such books circulate. Indeed in England, in 1865 and 1866, a small 'Year-Book of Pharmacy' was issued by private enterprise, but its publication soon discontinued. Your Committee is of opinion that Great Britain should not be without such an annual report; and that, whilst the publication of the work would further the best interests of pharmacy and pharmacists, its issue would materially strengthen the position and increase the usefulness of the Conference. In support of this opinion your Committee has appointed a Sub-Committee to consider and report on the question in all its details, and trusts that the result will be communicated to the present meeting. With regard to the cost of publishing a year-book, your Committee is of opinion that it will only be necessary to represent to all engaged in the practice of pharmacy that by an annual member's subscription of five shillings they will receive a volume worth a larger sum, when an increase of funds will be obtained sufficient to cover all expenses.

"In conclusion, your Committee views with much pleasure the cordiality with which the Conference has been invited to visit this western district of England, and trusts that the results of scientific and social intercourse here will be of commensurate value with those of any previous meeting."

Mr. **Brady** presented the Statement of Accounts:—

The Treasurer in Account with the British Pharmaceutical Conference, 1868–69.

Dr.	£.	s.	d.
To Cash in hand, August, 1868	35	15	7
" Sale of Proceedings	0	3	0
" 495 Subscriptions, viz.			
6 for 1865–6			
56 for 1866–7			
111 for 1867–8			
296 for 1868–9			
21 for 1869–70			
3 for 1870–1			
2 for 1871–2 (Total 495) ...	123	15	0
	£159	13	7

Cr.				£.	s.	d.
By General Printing—J. E. Taylor and Co.	£12	2	0			
" General Printing—J. Bell	1	14	0			
				13	16	0
" Cost of Proceedings—J. E. Taylor and Co.				24	10	0
" Contribution towards the Expenses of the Norwich Exhibition, etc....				25	0	0
" Postage				9	6	6
" Stationery				2	19	6
" Carriage of Parcels				0	6	11
" Advertising...				1	16	0
" Box for Conference Papers				0	16	6
" Various Petty Expenses, including Cost of Directing Circulars, Newspapers, etc.				1	12	1
" Balance in hand				79	10	1
				£159	13	7

1869.	£.	s.	d.
August. Balance in hand	£79	10	1
Subscriptions due (estimated)—			
11 for 1865–6			
53 for 1866–7			
99 for 1867–8			
204 for 1868–9 (Total 367) ...	91	15	0

Examined and found correct,
GEORGE CUBITT, } *Auditors.*
EDWARD ARNOLD, }

Norwich, *August*, 1869.

Mr. **Palk** (Exeter) moved the adoption of the Report and Treasurer's accounts, and congratulated the Conference that it had, at so early a period in its history, achieved so satisfactory a degree of success.

Mr. **Husband** (Exeter) seconded the motion.

In putting the resolution, which was adopted with applause, the **Chairman** pointed out the small cost at which the operations of the Society were carried on, and acknowledged the services of the General Secretaries.

Some conversation followed as to the amount of arrears standing upon the Treasurer's statement, when that officer explained that a large portion of the amount was but little overdue, and nothing was put down as available that exceeded four years from the time of becoming due. A large proportion of these subscriptions would certainly be paid.

Mr. **Smith** (Torquay) urged the more rigorous enforcement of the bye-law against defaulters, when Professor **Attfield** explained that the small subscription induced some members to defer their subscriptions and pay for three or four years at once.

Letters were acknowledged from the Secretaries of many provincial Chemists' Associations, and from various members of the Conference, regretting their inability to be present.

The **President** said that he had much gratification in announcing that they were favoured with the company of the President of the Pharmaceutical Society, Mr. Evans, who was a Vice-President of the Conference. They had also amongst them the excellent Registrar of the Pharmaceutical Society, Mr. Bremridge, who was peculiarly in his right place as being a former resident in Exeter.

The **President** then delivered the following

INAUGURAL ADDRESS.

Gentlemen,

The custom which has hitherto prevailed at the annual meetings of the British Pharmaceutical Conference imposes on the President for the time being the duty of initiating the proceedings by a few preliminary remarks, or as our secretaries are pleased to call it—an address. Properly to perform this duty is to me no easy task, but it would be still less so if I could not commence by congratulating you on the growing usefulness and importance of our association. Last year we met in an eastern capital: our sixth anniversary brings us to the west of England to find in the good city of Exeter a welcome no less cordial and fraternal than we have experienced on any previous occasion. Had the Pharmaceutical Conference no other merits, we might say that at least it gave the opportunity for some agreeable relaxation,—an excuse for breaking away for a week or more from the routine-occupations of business,—an occasion for visiting a locality which one might otherwise have no particular object for seeing, and of social and friendly intercourse to which often attach the most pleasant recollections. But our Conference claims more than this:—and the Report of our meeting last year at Norwich would prove, were it necessary, that the advancement of scientific pharmacy is one of the very principal objects with which our association is concerned.

On that occasion, it will be remembered, a portion of two sittings was occupied in a very animated discussion of the Pharmacy Act, then just passed, and in listening to an explanation of the new law, ably given by two members of the Conference who were particularly conversant with its provisions. It would be interesting to know what have been the experiences of our members as to the working of the Act in the practical carrying on of business. Has it proved a safeguard and benefit to the public? Have its provisions with regard to the sale of poisons been easily complied with, or have they been found irksome, or even impracticable? To these questions, it is to be expected, the answers will be very various, owing to the diverse character of the chemists' businesses on which the law will bear. Speaking from my own experience, I may say that in the city of London there has been very little difficulty in complying with the requirements of the Pharmacy Act, and that its tendency has been advantageous to public safety and convenience. On the subject of Registration and the other important provisions of the Act, I will now say nothing; but I must make a passing allusion to the very great stimulus to improved education which such a measure will infallibly prove. Its effects are already apparent: —in no previous year have the laboratories at Bloomsbury Square been filled with more numerous and intelligent students; and though I know that some exception may be taken to one class of our examinations on the ground of their lenient character, it is no insignificant fact that 600 persons have passed these ordeals in the house of the Pharmaceutical Society during the first six months of the present year.

With regard to the sale of poisons it is not a little remarkable that in this country no law should have been in force to restrain or regulate it, until the Arsenic Act was passed in the year 1851. Contrast this with the state of things in France, where so far back as A.D. 1353, nearly five hundred years before, a law was passed to regulate the profession of apothecary and herbalist, and to subject the shops of such persons to inspection. By this law it was enacted,

> that they should not sell or deliver any dangerous poisonous medicine or such as would occasion abortion, whether simple or compound, to any person out of the pale of the Christian faith or to any person to have the same if they did not well know that he was a master, or learned person, or expert in the science of medicine and well known, the which they should judge in their conscience sufficient, that it was by express command of a physician who had sent for such medicines and as above is said * * *

The necessity of subjecting a buyer to something like a theological examination may seem now-a-days rather unpractical, but not impossible if intended, as I think it was, to be enforced against Jews who in the middle ages were distinguished by their dress, and were as is well known, the objects of every kind of persecution and opprobrious distinction. The same law contains other curious provisions, some of which descend to minute particulars, as the following:

> * * * * and also that the medicinal electuaries, or opiates, or other medicines liable to be long kept, made and put into pots or other suitable vessels, shall be labelled with the year and month when confected, and that they shall sell the same at a loyal, just and moderate price and with just regard to variation in the currency * * * * * and also that whenever required, they shall weigh all their medicines and not deliver them by guess.

In the previous reign, that of Philippes de Valois, an injunction concerning the apothecaries of Paris was addressed by the king to the provost of the city, requiring that he should compel the apothecaries to show their medicines to the Masters of the Faculty of Medicine, that the latter might judge of their purity and good condition.*

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* These laws are thus quoted in the *Recueil Général des Anciennes Lois Françaises par* Decrusy, Isambert et Jourdan, Tome IV. pp. 679-681 and p. 424.

"Ordonnance sur l'exercice de la profession d'apothicaire et d'herbier, et qui les soumet à la "visite"—Paris, août, 1353.

"Jehan, par la grace de Dieu, roy de France; sçavoir faisons à tous presens et avenir"

"* * * * et qu'il ne vendront, ne bailleront aucune medecine venimeuse, perilleuse, ou qui

In connexion with the Pharmacy Act, it is proper that I should here inform you that the proposal made at our meeting at Norwich last year for some public recognition of the eminent services rendered to the cause of pharmaceutical education and the improvement of the status of pharmacy, by Mr. Sandford, was warmly taken up at meetings held at the house of the Pharmaceutical Society on the 6th and 13th of October last, on the latter of which occasions a committee was organized for carrying it into effect. It is unnecessary that I should recount to you the subsequent proceedings and numerous meetings of this committee:—suffice it to say that a subscription was raised, amounting to about £500, of which £200 invested in the form of plate, was presented to Mr. Sandford on the 19th of May last, on the evening of which day a complimentary dinner was given to him at the Freemasons' Tavern. The balance of the subscription is to be expended on a portrait of Mr. Sandford, to be placed on the walls of that institution for the welfare of which he has laboured with so much devotion and, I think I may add, with such eminent success.

The progress of scientific pharmacy as evidenced by the various memoirs, papers and notes that have appeared in this and other countries during the year that has elapsed since our last meeting, is a subject too wide and too difficult for me to attempt to discuss on the present occasion. Yet it may be neither uninstructive nor uninteresting if I direct your attention to a very few of the numerous valuable communications on pharmaceutical subjects that have been brought forward during the last twelve months, though as I have hinted, it is impossible for me to offer any fair *résumé* of them in the few brief moments at my disposal.

First let me notice the continued labours of Mr. John Eliot Howard on the chemistry and physiology of Cinchona, of which good proof is presented in his recently published *Quinology of the East India Plantations*, a copy of which is on the table. In this fine work, the author discusses a variety of subjects connected with the culture of Cinchona in India, such as the acclimatization of the various species, the elevation above the sea-level at which the culture proves most successful, the effects of protecting with moss the stems from which the bark has been removed, the mode in which the bark is renewed, the chemical constitution of the wood and leaves of Cinchona, etc. The so-called *mossing-process*, which simple as it is, seems likely to play an important part in cinchona-culture, consists in covering with moss the portion of stem from which a strip of

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“ puissent faire abortix, simples ou composées, à nulles gens, qui soient hors de la foy chres-
“ tienne, ni à aucunes gens avoir se il ne connoissent bien, que il soit maistre ou sciencier, ou
“ expert en la science de medecine, et bien cognu, lequel il cuideront en leur conscience
“ souffisant, que ce soit par exprès commandement de physicien, qui les eut envoyé querir, et
“ se comme dessus est dit * * * * *

“* * * et aussi que les medecines electuaires ou opiates, ou quelconques medecines de
“ longue conservation, faites et mises en pots, ou autres vaisseaux convenables par eux, ils
“ mettront sur le pot, l'an et le mois de la confection, et que il vendront à loial, juste et
“ moderé pris, et loyal et juste regard à la mutation de la monoie * * * * et aussi que
“ il peseront toutes leurs medecines, et ne les bailleront pas en tache, toutefois que requis en
“ seront.”

“ Mandement portant que les remèdes des apothicaires de Paris, seront visités par les médecins de la faculté.”

“ Philippes par la grace de Dieu, roy de France: au prevost de Paris, ou son lieutenant,
“ salut.”

“* * * * et que tu les contraignes à montrer ausdits maistres [de la faculté de mede-
“ cine] les medecines laxatives, et les opiates, qui se gardent par long temps, pour les voir,
“ avant que elles soient confites, et sçavoir qu'elles soient bonnes et fraiches et non cor-
“ rompuës et tresallées * * *”

“ Donné à Paris le 22 de Mai 1336.”

bark has been carefully removed.[*] The wood thus laid bare exudes a delicate cellular tissue, having the aspect of minute gelatinous drops, which gradually increasing and hardening, ultimately forms a continuous layer of new bark:—and now comes the interesting fact that this new bark is richer in alkaloids than that which it replaced; and bark of the second renewal is richer than that of the first, and of the third than that of the second. "Is this state of things" says Mr. Howard "to last and become permanent, so that by continually strip-"ping the trees of portions of their external covering, it should become in the "same proportion more rich in the very product that we need? This seems "very improbable, yet it is the conclusion to be arrived at from the above ex-"periments."

The increase of alkaloids, let me observe, is not trifling but in extreme cases is almost double. It is also stated that bark the third time renewed is better fitted for the extraction of quinine than normal bark, and yields the alkaloid in a state in which its purification is singularly easy.

Mr. Broughton whose assiduity in this field of research continues unabated, made experiments on two trees of *Cinchona succirubra* which showed that when the trunks were deprived of light for some months by being covered with tinned plate or black cloth, the amount of alkaloids increased more than 50 per cent; the proportion of quinine however remained almost stationary, the increase being in the shape of cinchonine and cinchonidine. In bark renewed under moss, an improved proportion of quinine is found.

The cultivators of madder are in the habit of covering up with earth the lower portion of the stems of the plant, finding by experience that deprivation of light tends to develope the peculiar colouring matter for which the plant is valued. It has been observed by Decaisne in examining microscopically the roots and stems of madder, that the cellular tissue of the former contains a yellow liquid, while that of the latter is filled with green colouring matter; and he has been able to prove by experiment that it is possible to change at discretion the production of chlorophylle and to cause the elaboration of the colouring matter of the root in its place. It happens in this case observes Mr. Howard, that the green portions which when exposed to light, absorb the carbonic acid of the air whilst disengaging oxygen, absorb, on the contrary, when deprived of light, the oxygen of the atmosphere which surrounds them and replace it with carbonic acid. Does not something analogous take place in the Red Bark tree, the shading of the stem of which is attended with such manifest advantage?

In Mr. Broughton's *Report to the Madras Government*, the following interesting fact is related:—among the Crown-bark trees (*Cinchona officinalis* L.) raised from seeds collected by Mr. Cross, there were observed to be a few having narrow, lanceolate leaves and a somewhat different aspect from their companions. A comparative analysis of the bark of these two forms of Cinchona (growing side by side and raised, as it would seem, from the same lot of seeds) afforded this interesting result,[†]—that that of the tree with lanceolate leaves

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[*] The *entire removal* of the bark from a stem is a destructive practice never adopted in India.

[†] Mr. Broughton's analysis of these barks may be thus stated:—

	Bark of tree with lanceolate leaves.	Bark of adjoining trees of *Cinchona officinalis*.
Quinine	7·15	2·06
Cinchonine and Cinchonidine	0·85	2·42
Total of alkaloids per cent	8·00	4·48
Sulphate of Quinine obtained crystallized	7·37	*undetermined.*

contained 8 per cent or nearly 8½ times as much alkaloids as that of the neighbouring trees of ordinary *Cinchona officinalis*, nine-tenths of these alkaloids being quinine, while in the others *less than half* was quinine. No finer quality of cinchona bark for the quinine manufacturer has probably ever been met with.

M. Lefort has rendered a good service by communicating to the Society of Pharmacy of Paris, the result of a comparative examination of the Ipecacuanha of Brazil and of that imported of late years from New Granada. It will be perfectly in the recollection of many of you that since about 20 years, the price of ipecacuanha has advanced 200 to 400 per cent, a circumstance due partly to the increasing rarity of the plant and the necessity of seeking it in regions more and more remote, and partly, it is said, to the stock of the drug being in few hands, and the trade being thus virtually something of a monopoly. This high price of the Brazilian ipecacuanha has naturally stimulated a search for the drug in other parts of tropical South America and has led to its collection in New Granada. Yet the drug of New Granada is not precisely similar to that of Brazil nor is its botanical origin well established;* and questions have been raised as to whether it may be legitimately employed, some authors supposing it to be *weaker*, others *stronger* than the indubitable ipecacuanha of Brazil. To determine the question of strength, M. Lefort has endeavoured to ascertain how the two drugs compare in their richness in emetine. Pelletier and Dumas having shown that emetine produces an almost insoluble precipitate with tannic acid, M. Lefort availed himself of this fact to determine the amount of precipitate obtainable by this reagent from the soluble matter of a given weight of root. The mean of his experiments showed Brazilian Ipecacuanha to yield 14·49 per mille of tannate of emetine and New Granada Ipecacuanha 13·4 per mille. The curious fact that a nitrate of emetine is but very little soluble, though sulphate, hydrochlorate, phosphate and acetate are very soluble, afforded a means of checking these results, and warrant the conclusion that the Ipecacuanha of New Granada is rather less active than that of Brazil. A second paper by M. Lefort on the preparation, properties and composition of emetine is well deserving the attention of those desirous of studying this alkaloid.

The indigenous plants of which the herbaceous parts are in common use in medicine in this country, are few in number, but important by reason of their potency as remedies. The English druggist unlike his continental brother has no large herb-room to keep in order; and the drying of herbs which he may have to superintend, is generally performed on a very small scale, if at all. Yet when Henbane, Belladonna, Digitalis or Conium are required for making their respective tinctures, and the leaves have to be stripped from the stems and dried, the desirableness of such a process must have often seemed questionable. Such at least has been my feeling:—I have wondered whether the henbane with its leaves exuding a clammy secretion from every hair, and its heavy narcotic odour, can be in nowise deteriorated by being subjected for hours to the heat of a drying stove? Whether conium, the active principle of which is a volatile liquid, loses none of its potency by a similar process? The same questions have occurred long ago to others, and the expressed juice of certain medicinal plants, preserved by the addition of alcohol was recommended nearly thirty years ago by Mr. Edward Bentley and Mr. Squire.

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* The true Ipecacuanha-plant is not known to occur in New Granada; for although in the description of the plants collected by Humboldt and Bonpland, *Cephaelis Ipecacuanha* is enumerated as from the mountains of San Lucar in New Granada (Kunth, *Synopsis Plantarum*, iii. 35), the indication must be regarded as doubtful. My friend M. Triana, himself an explorer of the country, has at my request sought for the San Lucar *Cephaelis* in the herbarium of Kunth in Paris, but found that it does not contain any authentic specimen of that plant.

The British Pharmacopœia has recognised the value of such medicines and has given formulæ for the preserved juices of Scoparium and of Conium, both excellent preparations, the latter especially being superior to any tincture prepared from a dry ingredient, whether leaf or fruit. It has been reserved however for a Belgian apothecary to investigate the subject in a thoroughly scientific manner, and to point out in what way and to what extent, the dried medicinal plant differs from the fresh. The late Dr. Schoonbroodt of Liége has done this, and has published in the *Journal de Médecine de Bruxelles** the result of his researches on 29 different plants, concluding his essay with some general remarks, of which I may cite the following:—

That dried plants never completely represent the same plants when fresh. Nevertheless it is possible for new and useful constituents to be developed during the process of drying, as in the case of Valerian, which when fresh contains essential oil but no valerianic acid: this however is an exceptional instance, the reverse being much more frequent.

That plants suffer by drying two kinds of alteration;—firstly, the loss of a portion of their volatile constituents; and secondly, an oxidation of their fixed constituents and of the remainder of their volatile. This oxidation is, in the author's opinion, in great part due to the structure of the dry vegetable tissue, which in its porosity resembles spongy platinum or carbon, and perhaps partakes of some of the gas-condensing power of these substances. The result of this action exhibits itself very decidedly in the case of valerian: when fresh, it contains no valerianic acid but an oxygenated essential oil, which by the action of the air and alkalies, is slowly converted into valerianic acid. It also contains another volatile hydrocarbon, which resinifies very slowly in the air. By the act of drying however, this formation of valerianic acid which even in the presence of an alkali is so slow, and this very tardy resinification by exposure to the air, are very materially hastened. There is found in fact, in dried valerian a comparatively large amount of ready-formed valerianic acid, the presence of which is evidenced by the strong smell of the drug, while the fresh root is devoid of odour and contains no resin.

The author further observes, that it is always advantageous in the preparation of alkaloids and other active principles to employ the fresh plants, and as far as possible to conduct the operations thereto belonging at a low temperature. Alkaloids are thereby obtained in a condition more favourable to crystallization; the loss, often considerable, resulting from decolorizing by charcoal is avoided, and recourse to chemical reagents for their isolation, or rather to free them from the products of their own alteration, is dispensed with.

As to the drying of medicinal herbs, the author remarks that the oxidising influence of the air being the principal cause of deterioration, it is desirable that the operation should be performed as rapidly as possible and that the herb should be compressed into a compact mass, after the manner pursued by the American herb-dryers.

The *Pharmaceutical Journal* for last September contained a warning regarding the purity of Aconitine, which has not received all the attention in this country that it seems to deserve. It was to this effect,—that English aconitine, or at all events a sample received from London as such by Mr. Merck of Darmstadt, was found to possess chemical and physical characters very different from those recognised as proper to true aconitine. It was but slightly soluble in ether and much less soluble in alcohol than pure aconitine and dissolved with difficulty in chloroform. In boiling water it did not become soft and plastic but remained pulverulent; from boiling alcohol it could be readily crystallized. Notices contrasting so-called *English* and *German* aconitine have appeared in many of the Continental journals; and it seems to be accepted as a settled fact that in England, *aconitine* signifies something very different from what it does abroad. But so far as I have observed, this assumption is far too sweeping:—at least I have found that aconitine in my possession manufactured in London by houses of repute (and what I examined had been purchased long before attention had been called to the subject) had precisely those properties which are characteristic of the true alkaloid. The chemistry of aconite, a most difficult subject, is now occupying the attention of some of our best pharmacologists, and their labours cannot fail to make plain some points in its history hitherto obscure.

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* Vol. 45 (1867) p. 162 etc.; Vol. 46 (1868) p. 62. A German translation has appeared in the *Vierteljahresschrift f. Prakt. Pharm.* 1869, p. 78, and an abstract by Mr. Maisch in the *American Journ. of Pharm.* and *Pharm. Journ. and Trans.*

In the suggestive list of *Subjects for Papers* which our secretaries do not fail annually to bring before us, there has been for years included a catalogue of vegetable alkaloids each of which for one or several reasons, requires further investigation. One of these, *Buxine*, is the subject of a very interesting memoir by our esteemed member Dr. Flückiger, an abstract of which with some new matter he has been good enough to prepare for our meeting. I shall be glad if some other of our members will undertake to reduce this list.

The adulteration of Olive Oil is a subject that has often claimed the attention of chemists, and the diversity of the tests proposed indicates how difficult it is to detect the sophistication of this important production. The increase in the manufacture of soap in some of the cities of southern Europe has led to the importation of a variety of oils and oil-seeds which have presented strong temptations to tamper with the oil shipped as *Olive Oil* to foreign countries. For the benefit of any of our members who may feel disposed to work on such a subject, I may mention that a prize of £600 is offered by the Chamber of Commerce of the Department of the Alpes Maritimes for a prompt and easy method, not involving a chemical process, of recognizing the mixture of seed-oils with olive-oil.

Our indefatigable colleague Dr. Attfield has during the past year communicated many practical and useful observations on pharmaceutical subjects, one of which I will here briefly recall to your memory.

Precipitated Sulphur.—Notwithstanding that attention has been repeatedly called to the desirableness of supplying this drug in a pure form, it appears that the calcareous *Milk of Sulphur*, consisting of about 34 per cent of sulphur with 66 per cent of sulphate of lime, is still very generally sold. In justification it is said that the public prefer the impure article as being whiter and more easily miscible with water, that it is the true *Lac Sulphuris* of the Pharmacopœia, *sulphur præcipitatum* being a distinct preparation;* to which I may add another consideration (too far fetched, let us hope, to be real), that the first is but half the price of the second. It is hard to combat popular prejudice, and sometimes impossible for a druggist to convince his customer that one article is less adapted to his requirements than another. I have heard a person require the rankest and most offensive Cod Liver Oil in preference to what was sweet and new; and have even known an ointment that was old and rancid habitually preferred to that which was freshly made. Yet in proportion to the amount of confidence reposed in the knowledge, skill and fidelity of the druggist, so will the public accept his judgment in matters pertaining to his own art:—and even a druggist's dictum that pure Sulphur is better than Sulphur and plaster of Paris, will come to be admitted as reasonable.

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* It is true that the *Sulphur præcipitatum* of the Pharmacopœia of 1746 was ordered to be made with Sulphur, lime and Sulphuric acid; and the *Lac Sulphuris* of that of 1721, with sulphur, lime *or salt of tartar*, and sulphuric acid. But it is questionable if the chemists of that period were aware of the essential difference of the products obtained, according to whether a lime or a potash-salt were decomposed with sulphuric acid, for Pemberton in his *Dispensatory* (1740) calls the preparations "*similar*", but says that the one "*will not look so white*" as the other.

Our art, gentlemen, is ever progressive. All science is interesting for us, since almost every scientific discovery may sooner or later, directly or indirectly, yield some result profitable to pharmacy. Let us not therefore neglect our opportunities, but identifying ourselves with the general advancement of knowledge, let us strive to improve by every means in our power that branch of the healing art which it is our province to cultivate.

Mr. Cooper said that he had peculiar pleasure in moving that their best thanks be presented to the President for his admirable address, which exhibited such deep research. Mr. Hanbury had told them of the investigations of others, but there was no one connected with pharmacy who contributed more to a certain knowledge of the art than did Mr. Hanbury. As to the new regulations upon the sale of poisons, it was hardly likely that all would view them alike: in rural districts they could not fail to cause inconveniences.

Mr. Bevans (San Francisco) seconded the resolution, which was carried with applause.

The President acknowledged the vote.

The reading of papers was then proceeded with.

ON PHARMACEUTICAL RESPONSIBILITY AND REMUNERATION.

BY MR. EDWARD SMITH, TORQUAY.

At the last meeting of the Pharmaceutical Conference at Norwich, a letter was read from Mr. R. W. Giles "On the Relation of Remuneration to Pharmaceutical Responsibility."

As the subject matter of that letter has hardly received the consideration it well deserved, I venture to bring it again before your notice at this meeting.

The gist of Mr. Giles's letter was that, considering the responsibility necessarily attendant upon our business, and the anxious care and constant application required to carry it on successfully, the remuneration attached to it is such as will not "afford to the industrious pharmaceutist a reasonable prospect of providing for his latter days without the aid of the Benevolent Fund."

With this, and, indeed, with everything advanced by Mr. Giles, I heartily agree; nevertheless, it is a melancholy picture to present to those just entering the business: those already engaged in the struggle know full well how great is the truth of the remark. The reflection that we are ourselves the cause of this great evil not only makes our position the more humiliating, but upon the majority of our brethren seems to have a very depressing effect, deterring them apparently from struggling and fighting for better things. I do indeed hope and believe there is sufficient *νοῦς* and 'Geist' in our body to enable us as a body to take and maintain a higher position. The public and the Legislature are gradually, but persistently, asking from us higher and higher qualifications, and for this higher status we must make ourselves in every way fitted. As a compensation, we ought gradually to expand our ideas of what constitutes fair and honourable remuneration.

Two powerful and sometimes antagonistic influences pervade the pharmaceutical mind,—there is the commercial spirit and the professional spirit. A mind well balanced, that is, in which neither the one interest nor the other preponderates, is best calculated at once to advance its owner's material and social position. We see the effect of an undue excess of the commercial spirit in those suicidal cases of cutting down prices too frequent amongst a certain class of pharmaceutists. The desire to increase the funds of the exchequer is undoubtedly in itself very natural, and one to be commended; but this desire should always be controlled and leavened, and toned down by a feeling of professional responsibility, and if this responsibility were once realized the danger of low prices would very soon fade away. The public, as a rule, do not ask for and do not want cheap physic. If the pharmaceutist would only take his better feelings into confidence we should hear no more of starving prices, unseemly jealousies, and selfishness, for, after all, selfishness is at the bottom of all price-cutting. On the other hand, if the professional spirit outweighs all other considerations, we find one of those painful cases in which the individual feels himself so far above, and out of the pale of ordinary commercial transactions, that disappointment and failure are merely questions of time. We find this man continually chafing and mortifying himself, constantly complaining of his business, finding fault with everybody and everything around him, unsettled in his mind, because he thinks it very much *infra dig.* to sell twopenny-worth of rhubarb or spread a threepenny plaster. He has entered what he thought a profession, and finds it, if I may use the expression, a professional trade.

Pharmacy, as a trade, is surrounded by responsibilities which do not obtain in any other business, and which the public have not altogether as yet appreciated, because the pharmaceutist himself has not sufficiently considered the nature of his calling, nor valued in a just manner the intellectual ability required of him over and above that which is necessary to the carrying on of an ordinary business.

It may be said, however, "It's all very well to tell us we are not fairly paid, and so on; we are very willing to receive more for our services, but how is it to be done? How do you propose to improve our pecuniary position?"

Well, this I believe to be a far easier matter than is generally suspected. The one great thing necessary is, that all petty jealousies and underhand rivalry amongst neighbours should be eliminated from our minds, and discouraged in every possible way; we should strive rather to promote and acquire a feeling of confidence in each other.

Mr. Giles struck the right chord when he said "our scale of charges should be regulated by the number of doses." I have long advocated this principle, which I believe to be the only fair one. Oftentimes it is merely the momentary whim of the prescriber whether we have a mixture of six doses, or double the materials in the same bottle in twelve doses. Now, if the first be charged eighteenpence, it is manifestly unfair to charge the second the same price or a few pence more, and yet this is frequently and habitually done. If we adopt the plan of charging per dose, we become perfectly independent, as far as profit is concerned, whether the physician orders his medicine to be taken by drops or by bucketfuls; and nothing would give a more deadly blow to the modern system of concentrated medicines which is adopted, so says the 'British Medical Journal,' "chiefly with a view to economy for the patient, who gets more for his money." But surely, if the patient desires economy, it would be far more honourable to allow the pharmaceutist to prove his liberality by charging a nominal price to patients who are not in a position to pay regular prices than coerce him, through the medium of a prescription, to do that grudgingly which would be otherwise a source of pleasure to him. I think I may confidently appeal to the general body of pharmaceutists to bear me out in this, that we do repeatedly make, and are in the habit of making, allowances in charging medicines to those who we believe or know are not in a position to pay the usual and legitimate charges.

Of course, no plan can ever create a universal tariff for all drugs and medicines. As for the retail, that being essentially the trade part of the business, must be guided by purely trade considerations, and these are regulated by so many distinct and differing circumstances that it is certain nothing satisfactory could be done.

With regard to the charges on prescriptions, the great historic houses will always be able to obtain any price they think fit to ask. The less fortunate houses must follow them as closely as circumstances will allow. No regulation will ever equalize, in every case, the London and provincial charges, nor, indeed, can even London prices themselves be equalized. A long stride in this direction may be made if the Pharmaceutists in each locality or town will agree to a standard of prices, below which they will pledge themselves not to go. Each locality, whether London or provincial, knows best its own capabilities, and if those in each district would only do their best for the common good of all, the natural tendency of things would be to place us in a position to obtain very much better prices.

But in order to do this, it is absolutely necessary that we should have confidence in each other. It is that much-to-be-regretted feeling of jealousy that mars all our attempts to improve our prospects. Why this is so it is difficult to explain,—but so it is, and this to an extent unknown in any other business. We see, on the one side, how the bakers, grocers, drapers, and others meet together, agree upon prices, and, what is more to the point, stick to their agreement. On the other side, we see in the pharmaceutical ranks disunion, and neighbour arrayed against neighbour. I have known men who have lived in the same town, nay, in the same street, for years together, without so much as speaking, even meeting in a common assembly, and simply casting a furtive and suspicious glance at each other, evidently impressed with the notion that each one regarded the other as an interloper, a rival, one to be avoided at all hazards. The new Pharmacy Act has put us all in the same boat, and this is just the time to make a radical change in our manners, or, at any rate, to make a vigorous attempt to do so. The Pharmaceutical Society has already done wonders in this direction in a general way, but its ramifications and influence have not been sufficiently felt in the provinces. The local Secretary of the Society in every place should consider it a part of his duty to bring about a better feeling; he should institute occasional meetings to discuss and chat over, in a friendly way, little business matters that from time to time are continually cropping up; and it is astonishing how much we may influence each other, almost without knowing it, smoothing down those angular peculiarities we all possess. For this reason the Society should be especially careful in its appointment of a local secretary. A post of so much power for good or evil ought not to be lightly given up to the first man who holds up his hands. In most places there is usually some one who, by common consent, is considered the leader or father of the profession, and he is precisely the one who should be induced to undertake the post. In large towns it might be desirable to appoint one or more sub-secretaries or district secretaries, whose business would be to take the initiative in promoting friendly meetings, as before suggested, in their several districts. Without some such leader, I fear, it would be quite hopeless to expect any particular individual to take the matter upon himself.

Another great help would be the adoption by all of a general price-mark, so that all prescriptions when first dispensed may be so marked that every succeeding dispenser would be enabled to charge precisely the same. If this were faithfully carried out, and doubtless it would be by all respectable men, would go far towards allaying the popular feeling, caused by ever-varying charges, that the cost of physic is so little as to be difficult to charge at all, the limit being the conscience of the dispenser. Now-a-days prescriptions travel with rapidity from one end of the country to another; a prescription may be dispensed to-day in Edinburgh and to-morrow in London. This, so long as a difference existed between the two Pharmacopœias, led not only to much inconvenience, but paved the way to something positively dangerous. To this fact are we mainly indebted for the British Pharmacopœia; and, for a very analogous reason, we shall eventually be compelled to do away with much of the discrepancy in charges. It is extremely discreditable to us that one and the same medicine is liable to be charged half-a-dozen prices, in as many Pharmacies. A general marking of prescriptions would very often prevent this.

In my own business we are daily called upon to dispense medicines, previously had in some London West-End house. We find no price-mark, consequently being quite in the dark as to the previous charge, we can only go at it haphazard, the chances being greatly against our hitting the right figure. Well, the result of this is, that if our medicine is, as it ought to be and as I believe it is, precisely the same as the great house, our charge, if below theirs, must cause a feeling of something akin to unfairness on the part of the London house, and any material difference cannot but cause reflections anything but creditable to the practice of Pharmacy.

To sum up concisely, the present remuneration of pharmaceutists is wretchedly inadequate, and in no way represents an equivalent for the educational, intellectual, and other demands made upon them. This state of things is owing in a great measure to their own internal jealousies, and senseless rivalries, and can only be remedied by local and general combinations, by mutual concession and more liberal notions of each other, and by more social and friendly intercourse with each other.

Nothing remains for me but to urge the leading houses, throughout the country, earnestly to take the matter in hand. Let them mark the charge on every prescription and let it be a remunerative one.

Manchester and several other towns have already made an advance in this direction, but these isolated cases, although very good in themselves, require and deserve the sustained support of every pharmaceutist in the country, and for this reason I venture to ask the members of this Conference, individually and collectively to give a helping hand to so desirable an object, and thus assist in lifting up their profession to that status in the social scale it has a right to occupy, and to which its responsibilities and educational requirements fully entitle it.

The thanks of the meeting were accorded to Mr. Smith for his paper, and subsequently to the other authors of papers read to the Conference.

Mr. SAVAGE (Brighton) pointed out that the nomination of local secretaries of the Pharmaceutical Society lay with the members of each town, as voting-papers were sent out annually in May, and the Council were governed by the returns made.

The PRESIDENT said he should like to say a few words on the subject of prices, which was constantly coming up, and was a growing grievance and source of difficulty to them all in numerous ways. It seemed to him that they were not right to allow patients for whom they dispensed to regard the charge made as being for the drugs, as, if so, the natural comment was, "What tremendous prices you get for your drugs?" Say for a little arsenic and water. The drug in that case did not cost an appreciable price, but it was not for the drug that the charge was really made. It was for the *time and skill* employed in dispensing that their remuneration was earned,—it was, in fact, *a fee*. The subject of greater uniformity of prices was one deserving of consideration, although he was not prepared to say that he saw how to meet the difficulty of the case. There was another subject to which he would allude, namely, the much better feeling which had grown up amongst the chemists of London since the establishment of the Pharmaceutical Society. Now, when he had a complaint from a customer that his prices were higher for any article than those of another chemist, it was his practice to write a note to such chemist, and inquire how much he had charged. He always received this information at once, and had pleasure in giving similar replies to such queries when put to himself. He invited those present to offer any remarks upon the interesting paper to which they had listened.

Mr. SCHACHT (Clifton) said that this question of prices had always appeared to him to be one of morals rather than anything else, and he did not see how they could arrive at any practical result from a discussion of the question.

Mr. COOPER alluded to the case of a person who sold 13½*d.* patent medicines at 10½*d.*, and queried whether the marking of prices charged upon prescriptions would not induce such persons to undersell.

Mr. STODDART (Bristol) said that his own experience went to show that lowering the price of a medicine produced no increase in its sale, but on the contrary, might diminish it. When a prescription which should be charged 2*s.* was brought to him after being previously prepared by a "cutting" chemist for fifteenpence, he handed it back to the patient, stating that as a reason. Almost invariably he was requested to prepare it, and found his customer come again.

Mr. BALKWILL (Plymouth) said that, at Plymouth, many of the chemists agreed upon a price-mark and used it on each prescription. When any one violated the rule, they changed the mark. The liability for damages in case of accident should not be overlooked, since very heavy amounts had been recovered from some of their brethren. He thought that the position of chemists with regard to public hospitals might be improved if the medical staff would avail themselves of the experience of drugs possessed by pharmacists.

Mr. PAYNE (Wallingford) agreed that many of their prices were too low and unremunerating, as had been pointed out by Mr. Hampson in a recent paper given before the Manchester Chemists' Association. He thought the cheaper labour of apprentices was one reason why this was the case, in country places, where they were ordinarily employed instead of assistants.

Mr. BRADY (Newcastle-on-Tyne) said that the price-list which he most frequently met with was that agreed to by the chemists of Edinburgh, and which had become the standard for a district of considerable extent, since the medical celebrity of Edinburgh was great. The scale of prices for dispensing was thought by many to be unnecessarily low, and he hoped it was correctly rumoured that it was likely to be raised. There was a mitigating circumstance in the fact that medical men in Edinburgh did not dispense their own prescriptions, and those going into the hands of the chemists were largely in excess of those of any other place he knew. Referring to Mr. Balkwill's remarks as to the representation of pharmacists on hospital boards, he (Mr. Brady) was much interested in the question. Now that the Legislature had sanctioned Pharmacy as a profession, equally with medicine and surgery, he thought that no staff of a hospital could be considered complete unless this third estate was represented upon it. He must also point out how municipal and other local bodies directly caused the dispensing of prescriptions by surgeons rather than by chemists. He knew one small city in which no medical men dispensed their own medicines, excepting those who were compelled to do it by the Boards of Poor Law Guardians from whom they hold their appointments. This was a significant fact, and the subject one upon which an eye should be kept. At the same time, violent changes were not to be expected, since medical men had been generally their own dispensers up to a comparatively recent period. It was to the younger race of surgeons that they must look for the new *régime*, since it was easy to commence without dispensing, but not so easy to alter the old system when it had once been introduced.

Mr. SAVAGE (Brighton) said that he could not help calling attention to the gratuitous distribution of medicines at hospitals to persons quite able to pay for them. He instanced a case which occurred at the Sussex County Hospital, where a clergyman and his wife and daughter had received gratuitous medicines, the Board being obliged to stop these after due investigation.

Mr. COMMANS (Bath) said in reference to a fixed scale of prices, that he knew how much locality and other circumstances must affect it, but he hoped that they would attempt to follow a standard as far as they could.

Mr. KNAPMAN (Exeter) acknowledged the obligations of the meeting to Mr. Smith for his interesting paper, and he wished that he could go further and say that the course suggested appeared practicable. He did not think that this uniformity of prices could be carried out, and their experience in Exeter favoured this view, as they had formerly made the attempt. He could not but deprecate the practice of those chemists who undertook to prescribe medicines to their customers, thus leaving their own province to trespass upon a very dangerous one.

Mr. **Manby** (Southampton) suggested that the subject was not one upon which it was desirable to continue the discussion, although he sympathized with much that had fallen from various speakers.

The **President** remarked that it was natural to find a large number of members desirous of speaking upon a subject of so much interest and importance; but they were not likely to put their opinions into the form of practical action at that meeting, and he should now call upon Mr. Smith to reply.

Mr. **Smith** replied to the various criticisms of his opinions. He remarked that he did not wish to equalize prices, but he did wish to raise to a higher standard those that were too low. The chemists of watering-places, like Torquay, were in a worse position than those of the towns where their customers permanently resided, because they had so many prescriptions written by physicians whom they did not know. A general price-mark would therefore be of especial use to them. The public complained more at being charged irregular and inconsistent prices than they did because of prices being too high. He especially urged that independently of combination as to price, every one who dispensed a prescription should mark upon it the price charged.

Mr. **Hadford** (Devonport) said that he took great interest in this question, to which he had given considerable attention. Some time since, he heard it whispered that a neighbour of his was cutting down prices. He felt sure that the report was not true, and inquiry proved that it was not. In conjunction with his friend Mr. Balkwill, he had canvassed the chemists of Plymouth and Devonport on this question, the result being, that with very few exceptions, and these amongst those who had small businesses, a general agreement upon prices for dispensing was come to. He strongly advised all to try the system of marking the prices upon the prescriptions which they dispensed, and he was sure that the result would satisfy them, by preventing unpleasantness and disputes.

Mr. **Carteighe** said there was one important point which had not been considered; and that was one which had been alluded to by Mr. Giles last year: it was, that the best practical way out of the difficulty would be to charge by the dose. They simply wanted to know what was a fair price per dose for a four or six ounce mixture, or for a six ounce mixture in doses of a tablespoonful or a wineglassful. At present there was no consistency in their prices.

The **President**.—There is nothing like consistency in our system, and therefore we cannot have anything like consistency.

Mr. **Reynolds** (Leeds) said that the author of the paper had put very strongly his proposition, that a portion of their duties was performed at so low a rate of remuneration as to entail a positive loss. He agreed with the author, that making pills was the most unprofitable duty which they had, from the time which it occupied, and the small sum received for each dose. The quantity of pills used by patients was much less than formerly, whilst the trouble of preparing a small number of pills was not diminished. If it was not possible at once to achieve the whole of the reforms of prices which had been indicated, there was no reason why they should not reform the most glaring fault of their system, viz. the prices charged for pills. This might be done in every town.

ON SYRUP OF IODIDE OF IRON.

BY M. CARTEIGHE, F.C.S.

The simple experiments recorded in this paper have been made with the view of clearing up, if possible, the discrepancies contained in communications on the preparation and preservation of this important and elegant medicine contributed to the 9th Volume, N.S., of the 'Pharmaceutical Journal.' The first, page 260, by W. A. Tilden, B.Sc., after alluding to the now obsolete custom of introducing a coil of iron wire, recommends for its preservation the covering of the syrup with a stratum of oil and storing in the *dark*. Mr. F. Baden Benger, page 284, states that he had tried this plan "four or five years ago," but that "it failed to answer its purpose." In what way he does not say. He then mentions as his practice to make a solution of the iodide and add a suitable proportion to simple syrup, as required. Mr. T. B. Groves, page 421, finds that the best method is to add "half a fluid ounce of dilute phosphoric acid to each Pharmacopœia quantity (31 fluid ounces)." I did not hear Mr. Groves's paper read, but I understand that his proposal was considered *highly* improper. Mr. T. H. Holloway, of Sydenham, page 471, writes that syrup exposed in a window for a few hours daily to the direct light of the sun, keeps well, and that *discoloured* syrup may be restored to its normal condition by the same method.

In the discussion which followed the reading of the papers by Mr. Tilden and Mr. Groves, there was considerable difference of opinion as to how *long* the syrup would keep in the dark without becoming discoloured, but most of the speakers concurred in recommending small *well-filled* bottles and storing in the *dark*.

Pharmacists had long ago noticed that some discoloured syrups are restored by being heated in bottles in a water-bath for a short time. This observation led me, on the appearance of Mr. Holloway's letter, to try a few experiments based upon it.

Small white glass bottles, some filled and stoppered, others partly filled and covered with muslin, were exposed to diffused light inside a window, and to direct sunlight outside in a yard. The specimens exposed to diffused light retained their original colour for a considerable time, and then became gradually bleached. Those exposed to the direct light of the sun retained their colour for a few days, the time depending upon the brightness of the weather, and the volume and surface of syrup exposed, and then gradually lost their colour entirely. Several specimens of discoloured syrup, similarly exposed to direct sunlight, were in a few days restored, and when the exposure was continued, became gradually colourless.*

There seems to be a limit, however, to this bleaching action. Six fluid ounces of freshly prepared syrup were discoloured by being heated (June 11, 1869) for four hours in an open dish over a water-bath, with occasional stirring, and kept in the dark for a week. A portion has been exposed to direct sunlight without interruption since June 18 without sensible improvement. Another portion was heated in a bottle for twenty-four hours in a water-bath, with the effect of much *increasing* the depth of colour. A little tartaric acid was now added, on the recommendation of M. Jeannel, Pharm. Journ. N.S. Vol. X.; this lessened the colour, but did *not* restore it.

The specimens exhibited comprise:—

No. 1. Specimen of syrup made July 23, 1869, and exposed to diffused light in the open air in a bottle covered with muslin. *A little of the original colour remains.*

No. 2. Made June 28, 1869; and exposed to bright light in a bottle covered with muslin. *Colourless.*

No. 3. Made May 11, 1868, and exposed in shop window ever since. *Colourless.*

No. 4. Made April 3, 1869, discoloured by being kept in dark and afterwards exposed to bright light. *Colourless.*

No. 5. Very discoloured; heated in a water-bath for half an hour, April 30, 1868; and since that date uninterruptedly exposed to bright light. *Colourless.*

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* As Mr. Holloway remarks, in a subsequent letter, Messrs. T. and H. Smith appear to have been the first to observe this effect upon *discoloured* syrup. See Pharm. Journ. N.S. Vol. I. p. 353.

No. 6. Made April 3, 1868, and exposed to bright light ever since. *Colourless.*

No. 7. Made June 28, 1869, heated in an open dish for four hours in a water-bath same day, and exposed to bright sunlight since. *Still discoloured.*

No. 8. No. 7 heated in a water-bath till a deep yellowish-brown colour was formed, and 3 grains of tartaric acid added and exposed to bright light. *The acid reduced the colour, the light has had no effect.*

Quantities varying from 5 to 30 fluid ounces have been kept in good condition for months exposed to the light; occasionally a slight brown layer may be seen in the morning on the surface, but it disappears immediately on shaking the bottle.

As to the mode of *preparation*, I consider the Pharmacopœia process unexceptionable. It is, however, worthy of note, that if the syrup is heated rapidly to *boiling* before adding the iodide of iron solution, the preparation has less colour than if made at the lowest temperature at which the sugar will dissolve.

The conclusion formed from these experiments is that iodide of iron syrup may be preserved for a long period by exposure in white glass bottles to direct sunlight; the intensity of the light required being directly *proportional* to the volume and surface exposed.

DISTILLATES.

BY JOSEPH INCE.

Simple as are the details here presented, great discrepancy of opinion respecting them exists among modern writers. I have been compelled therefore rather to accept the guidance of the past, and to state the result of personal daily experience. Distilled Water forms the type of a large group of Aqueous Distillates. When first obtained it has a most unpleasant odour and corresponding taste. This is the case to a variable extent for which it is difficult to account; yet assuming that the distillation has been properly conducted: that no impurity can be detected either in the still or worm: that the heat has been carefully regulated and the product not overdrawn, the defect alluded to, remains, and such Aqua Destillata cannot in that condition be available for the purposes of Pharmacy.

Filtration through Charcoal has been recommended, but this is an inconvenient process. Time the great restorer turns alchemist—slowly but certainly, the taste improves and the odour disappears; but not under a shorter period than three months is the change effected, and not till then can it rank as a remedial distillate.

Take this water when freshly drawn—put a gallon of it into a well-stoppered bottle: one with a stopper so tightly fitting as to deserve the french expression bouché à l'émeri. This phrase not contained in the usual french dictionaries may be found in The Art of Distillation by Dr. French, date 1664, page 6. "Also you may make stopples of Glasses ground so smooth, the stopples being fastened in a Tourne and moystened with Emery and water, and so turned in the mouth of the bottle till it be fit, then wipe off the Emery, and smeer over the stopple with a liniment made with fine washed Earth and Oil, and so polish it, that no vapour can get forth by them." Introduced into such a bottle, standing in the heat or in the cold, in the dark or in the light, on examination in three months' time the distillate will be found in the same condition as when it originally left the still.

This leads to three laboratory suggestions.

First, to distil a less quantity than ten gallons does not repay the trouble of the operator.

We have two reservoirs each of the capacity of about 80 gallons, one only being in use. So soon as the first is emptied, it is refilled: the second then takes its place, and thus the supply is constant of a perfect water.

Secondly the supply of fancy stills, however beautifully constructed, holding from two to four gallons, results in disappointment. Thirdly, in storing water, let it be in a cool place in any convenient receptacle, simply protected from dirt and dust, but not hermetically sealed.

Bearing in mind the behaviour of Distilled Water we can better understand the nature of two much employed distillates, the first of which is Aqua Sambuci. The directions are as follows:—

℞ Fresh Elder-flowers, separated from the stalks, 1;
Water, 2: distil 1.

This water of little general repute, and considered only as a pleasant vehicle for lotions may be one of the most beautiful preparations of the Pharmacopœia. In all probability, these and many other instructions, are founded on experiments undertaken on the small scale. Practically the water stated is by no means sufficient for the flowers, and this may account both for the scanty favour in which it is held and for the great diversity of opinion respecting its mode of distillation. These delicate distillates require about four times the amount of water indicated in books—the scent finally produced is the concentration of dilution: the attempt to concentrate, in the balneum by the addition of larger proportion of ingredient, has, as far as I am concerned been a total failure: without passing judgment, full tolerance must be allowed for individual theories. In the last corrected edition of Squire's Companion will be found the following sentence. "There is always a large quantity of vegetable matter in this water, which causes it to grow acid and impairs its odour. In practice it is better to distil it of double strength and dilute it when required." To dispute so excellent an authority would be foolish: all that can be said is that there must be unconscious variety in the mode of manipulation. The recommendation given above is the one we most carefully avoid: when first distilled, Aqua Sambuci has no appreciable taste or smell: it is difficult to be identified in a decided manner. Wait—that is the sole secret of its distillation. Wait, nine months. The latent odour is gradually diffused, permeates through the distillate, is evolved, not created, and this leads us to a fact of the deepest possible importance. Meanwhile it will be best to allude to a third distillate, Aqua Rosæ. Many of the remarks with regard to Elder, apply to this preparation.

An elaborate précis of the German text of Dr. R. Baur of Constantinople (Neues Jahrbuch) will be found in the Pharmaceutical Journal (Vol. ix. no. vi. p. 286, Second Series) which will render minute description unnecessary.

Take Fresh Petals 1; Water 2; distil 1, is an instruction seldom, if ever followed. The Roses *will* swell up, and float in a most uncomfortable manner. Six times the amount of water would not be out of place.

Let us at once distinguish between Rose Water, the commercial article used in perfumery, and the Official Aqua Rosæ. As concerns the former we are at liberty to make it any way we please—with as much or as little Otto as may be thought proper, guided only by the instinct of producing a water fragrant and refreshing, such as the perfumed lady likes to use, and the hotels will buy.

It may go in the same category as Milk of Roses, and Circassian Cream, and I should as soon think of testing either with a Lactometer as of being profoundly scientific over the composition of a trade requisite. This disappointment occurs in genuine Rose Water, that distil it never so wisely, little if any scent at first comes over.

Wait—twelve months—and it *will* yield up its odour—then, and not till then is its distillation finished. Let me direct attention to the following.—In these distillates, and the same holds good respecting most, the main ingredient is *in* the water, forms part of it, nor can it be separated save by a destructive process. We have not Elder or Rose, mixed with water; nor have we water associated with Elder or Rose: but Aqua Sambuci and Aqua Rosæ.

Here we draw the line between the products of high Pharmacy and these of any other mode of preparation (suggested originally by convenience), whether authorized or otherwise. An essential Oil or essence, so admirably commingled as that no globule can be discovered by the microscope is but a mixture. It is an oil and water, or water incorporated with an oil. The difference may be thus expressed. In distillates, time, is in favour of development; in mixtures, time has a tendency towards separation, decomposition, and deterioration. Climate also is a terrible analyst. Heat, and a voyage out have been known to reduce the compound furnished into the elements of which it was composed. Enfleurage, a supposed modern art, but described by Alexis, date 1568, p. 46, well illustrates the point. Flower buds are sprinkled over layers of fat, (originally bruised almonds) contained in shallow frames. Maceration is effected so that the perfume of the flower is thoroughly extracted. No mechanical means of mixing essences with a fatty base can equal this process, which simple as it may be requires the advantage of soil and climate, and careful manipulation. The attempt to rival the experts of Cannes, Grasse or Nice by mechanical dexterity is hopeless. The druggist's imitation is a thing bearing a label, the french Pomade is a distillate.

Another subject claims attention for a moment.

The Nychthemerum (maceration).

The Prussian Pharmacopœia, published at Berlin, may safely be recommended to any English Pharmacist desirous of being acquainted with practical German Pharmacy. "The Universal," edited by J. Rennie, date 1833, is very scarce; there is however a french edition (Dr. Jourdan) which may readily be obtained through the usual channels. Both have of necessity the defect of bewildering by the mass of formulæ presented, hence while they are aids to the advanced student they are comparatively of little value to the learner. On the other hand, the Prussian Pharmacopœia contains alone, authorized German recipes and it is rendered still more useful by its triple index, the first including Nomina antiqua compared with Nomina nunc usitata; the second a list of Names and Synonyms of Remedies: the third a full catalogue of popular German names. The advantage of this last index cannot be overestimated. Finally the book is a specimen of pure latinity.

In the description of Spirituous Distillates will be found the expressive term nychthemerum. Its derivation is obvious, νὺξ and ἡμέρα: being the same compound expression as the Decameron of Boccaccio and it is to be regretted that the Latin construction forbade the use of the same termination. An illustration of its meaning will be found in an essentially German preparation: hence quoted. The old Spiritus theriacalis.

Sp. Angelicæ compositus
℞ Radicis Angelicæ libram unam
,, Valerianæ minoris,
Baccarum Juniperi, singularum uncias tres.

Concisis, contusis et in vesicam destillatoriam immissis adde

Sp. Vini rectificati libras sex,
Aquæ communis quantum satis.

Post macerationem per nychthemerum, destillent libræ sex, in quibus solve Camphoræ unciam unam cum dimidia et filtra. Sit limpidus, coloris expers.

The experience of the last fifteen years seems to demonstrate that this maceration previous to distillation may be extended beneficially to many aqueous distillates, and that the time specified, a night and a day is correct: less is insufficient, more, where there is an astringent or bitter principle, is objectionable. Judging from past trials, the general rule might be deduced that nychthemerum maceration may be applied to all dried substances submitted to distillation, Pimento being excepted. Aqua Pimentæ is a most unsatisfactory distillate, prone to rapid decomposition which it appears difficult to prevent. Filtration and separation of the oil have been recommended but with doubtful efficacy. Perhaps one of the finest distillates in British Pharmacy is Aqua Cinnamomi—with its full yet delicate flavour—its cordial, aromatic richness of both taste and smell. This alludes to true Cinnamon Water, not to the imitation.

Aqua Cinnamomi forms an excellent illustration of the desirability of the nychthemerum maceration. The Pharmacopœia directs Cinnamon to be bruised, forgetful that in operating on the large scale, an inconvenient quantity of powder would be produced. Draw over the Cinnamon directly, in literal fulfilment of the order, and having done so, test the Bark remaining in the still, and see if there be not sufficient reason for a different process. Twenty-four hours' maceration solves the difficulty and leaves nothing to be desired. During both the two last outbreaks of cholera in London, no cordial restorative was more grateful than plain Cinnamon Water, one ounce and a half for the dose. Had we stooped to low Pharmacy, we should have had to answer to a higher authority than the British Pharmacopœia.

The question may have suggested itself how far is Aqua Rosæ affected by the Nychthemerum? To which may be replied that we have no means of telling. Roses are the most perishable and evanescent of flowers. They have to be contracted for a month or six weeks beforehand and the grower cannot regulate his supply. The still is kept in readiness and the instant the Roses come, they are shot in, and distilled at once. Should two charges be delivered on the same day, the remaining portion is strewed in the thinnest layer possible, on clean flags or brickwork being occasionally watered by an ordinary garden-hose.

One day is the extreme limit this manœuvre may be practised and it is most objectionable. The Roses sweat at night and the product is inferior. Should the charge exceed the power of distillation, the Roses are mashed up with a wooden pitchfork, one pound of salt is added to six pounds of Rose (different operators vary this amount.) and the mass is rammed tightly into barrels. Practically we dislike the salt: object to its presence in the still and never resort to it unless in cases of necessity.

The Compound Aromatic distillates, many of them bearing celebrated historical names, base their reputation on three things; first, selection of exceedingly choice ingredients, secondly on the extension of the time allowed for maceration previous to distillation, thirdly their long storage before becoming commercial articles. There is manifested a distressing inquietude on the part of Pharmacists to get hold of particular formulæ. Once I had in my possession a huge pile of recipes in manuscript, the accumulation of about two centuries. Their revision left on the mind the firm conviction that forms are of secondary importance: quality is the first requisite, the liberal hand, and mode of manipulation together make the second. But if a man starves his essences, and groans over the costliness of drugs, he forgets that there is that withholdeth more than is meet and it tendeth to poverty. On this point we shall gain instruction from Ancient Pharmacy. An old black letter, date 1568 called the Secrets of Alexis, contains many of the aromatic compounds, specially ten Odoriferous waters. All are made on the same plan. Take as the case may be (modern spelling) Damask Rose, Lavender, Cloves, Cinnamon, Mace, Cardamom, Musk, Ambergris, Amber, Ol of Citron, Benzoin, Storax, Rosemary, Jessamin, Marjoram, Sage, Thyme, Nutmeg, Malmsey Wine, Spike Lavender, Honeysuckle, Sandal, Myrtle, water of Orange, Lemon and Citron flowers (all confusedly together which the french call eau de naphe) sweet Almonds, Coriander, Cassia, imported trade essences and oils. Add Rose Water, Lavender Water, the water of the herb that the Italians call Soldanella, Spike water, and other Spirits, Essences or waters found in books on Pharmacy dating before the nineteenth century. The which put in a convenient vessell leaving it so by the space of fifteen days. Afterwards let it be distilled in Balneo Marie, the manner whereof is described in the first book, and the water that shall rise out of it, put in a phial well stopped, in the sun, the space of fifteen days, and then you shall have a water of great excellence.

The Secret of Alexis is the secret of manufacturing Pharmacy: deduct from this and similar descriptions, the crude directions of the period and adapt them to modern usage; add experience and average manufacturing skill and there will be no need of purchasing expensive formulæ. It would be idle to conceal that which so many know, that the fifteen days maceration here described is largely exceeded in case of distillates of world-wide reputation. This paper cannot properly be concluded without a notice of an excentric distillate which appears subject to no rule.

The present French Codex (date 1866) has a chapter on the products of Destructive Distillation, (Produits Pyrogénés. Chapitre xxii.) seven of which are enumerated.

1. Empyreumatic Carbonate of Ammonia or Volatile Salt of Hartshorn. (Carbonas Ammoniæ Oleosus.) 2. Volatile Spirit of Hartshorn (Spiritus Volatilis Cornu Cervi). 3. Volatile oil of Hartshorn (Oleum pyrogenæum Cornu Cervi.)

The remaining four are Succinic products, and as the Amber preparations are extensively used in France, and their manufacture is larger in England than might be supposed, it may not be idle to offer a few particulars respecting the behaviour of reactions accompanying the distillation of Oleum Succini Verum.

The matter will be best illustrated by translating the instructions of the Codex.

I.

Impure Succinic Acid. Volatile Salt of Amber. Acidum Succinicum pyrogenæum. Put the Amber into an earthenware or luted glass retort, adapt an arm-piece and a glass receiver. Apply a gentle heat. The Amber will melt, swell up, and thick abundant vapours will be disengaged. At the same time a certain quantity of Succinic Acid impregnated with water and an oily matter will be condensed in the armpiece and receiver. Remove this Succinic Acid with a feather, before it is moistened and dragged over by too large a quantity of oil. Continue the process, and regulate the heat as long as crystals of Succinic Acid are produced. Change the receiver when no more appear, and apply stronger heat; the mass will cease to swell up (*boursoufler*) the distillation will be rapidly effected, and a particular Volatile oil will be collected. Proceed in the same manner until no further action takes place. The first product obtained is impure Succinic Acid; in this state it was called formerly Volatile Salt of Amber.

II.

Volatile Spirit of Amber. Spiritus volatilis Succini.

Take the liquid product of the foregoing distillation, composed of two layers—the one oily, which floats on the top—the other watery; separate by decantation. The watery liquid contains the Volatile Spirit of Amber, which is a dilute solution of Succinic and Acetic Acids and pyrogenous oil.

III.

Volatile Oil of Amber. Oleum Succini pyrogenæum.

The oily liquid product which floats on the Volatile spirit of Amber;—it is not, properly speaking, a Volatile oil analogous to that obtained from plants, but a mixture of various pyrogenous products little known. It should be rectified and preserved in like manner as the Volatile Oil of Hartshorn. (iv.) Volatile Spirit of Hartshorn, saturated by Succinic Acid and filtered forms the Impure Succinate of Ammonia. Liq. Cornu Cervi Succinatus.

A Pharmacopœia is not intended to teach the student the elements of those sciences in which he is especially engaged,—it is not the text book from whose pages a knowledge of Chemistry, Pharmacy, Botany and Materia Medica must be sought. Moreover its contents are not addressed specially to the Pharmacist but to the Medical Profession. The object of such a work is to provide formulæ which may facilitate the daily practice of Medicine. It is imperative, for the general safety, that it should indicate strengths, and assign tests of purity —which substances simple or compound must satisfy or be rejected;—that it should define and limit sources of production. But it is not bound to give advice gratis to the manufacturer, as to the best methods by which such strengths may be procured, or as to the mode of arriving at the readiest manipulative results. Pharmacopœial instructions require to be supplemented by practical experience. The difficulty with regard to this distillate (Oleum Succini) centres in the expression "en ménageant le feu"—the regulation of the heat.

Three kinds of retort have been recommended: the first of iron, which seems inadmissible: the metal rapidly absorbs and retains its heat, and though this inconvenience may be overcome, iron does not appear adapted to the purpose.

The same objection applies also to the "cornue de grès" the earthenware retort, though the egg-shape in which the latter is usually made is much in its favour; there is besides the drawback existing in both cases of not seeing the exact condition of the Amber when it begins to melt. No sooner is heat applied from any source than the Amber begins to swell in a formidable manner, and in one so variable that no two samples are alike. Many expedients have been suggested in order that this may be prevented; equal parts of sand and amber is a favourite remedy, but one not likely to be adopted by those desirous of obtaining after products.

The whole care of the operator should be directed to the management of the fire, urging it on, or checking it so as the most speedily, yet with safety to the process, to melt the *entire* contents of the retort. Once let this point be gained, and the oil may be distilled over to the last drop;—till then the dense thick vapours and the swelling up have to be carefully watched, while the rapidly formed Succinic Acid has to be as speedily removed, else the neck of the retort may be choked and the unchecked violent action of the Amber may end in a catastrophe. A glass retort, of a prolonged egg shape, capacity not less than ten gallons, with short wide neck—neck with no ledge—and the glass without a flaw, is the apparatus to be selected. The ledge just mentioned is objectionable as it forms a resting place for the Succinic Acid, rendering it difficult to be removed and thereby endangering the commencement of the process.

The source of heat is of some importance. The Codex wisely described it by the indefinite word "le feu." In one published account there is a statement that glass not being able to support the heat required, an earthenware retort on a sandbath should be employed;—this is a combination well qualified to determine failure;—a retort into which you cannot see, and a heat which you cannot regulate; while having myself without accident used glass days together while distilling Amber, the theory respecting its essential inadaptability may be called in question. At present the water-bath seems the most manageable source of heat; but for some years past I have thought, and not from hastily drawn conclusions, that "applied gas" will one day revolutionize many of our laboratory operations. I believe that there is a career and fortune still open to any one who, combining technical skill with a practical acquaintance with gas-work, shall be able to apply this source of heat to Pharmaceutical manufacturing purposes.

Judging from the Codex we might imagine that the whole of the Succinic Acid was first produced, and in due course the Oil;—but in practice, owing to the heat required to melt the entire mass of Amber (a thing of the last importance) the three products—Acid Liquor, Succinic Acid, and the Oil—rise simultaneously, while a yellow powder called Succinite is deposited in the neck of the retort. The two first are used in French Pharmacy, and the Oil is utilized on both sides of the Channel. Abroad it enters into the composition of the Baume de Fioravanti, Eau de Luce, Sirop de Karabé, and other preparations.

The average yield of oil from Amber ranges between 25 to 30 per cent. A skilful operator should obtain about twenty eight per cent. This distillate once seen and smelt can never be mistaken for another. Treated with Nitric Acid in proportions given in works on Materia Medica, the substance termed Artificial Musk is formed, which owes its peculiar flavour to the presence of Acetic, Propionic, and Butyric Acids. This should be kept under water;—when required for use, the acid liquor should be poured off and hot water added. The mass, however seemingly deteriorated by keeping melts together, every particle is recovered, and on being *pulled* will assume various shades of colour, rivalling the most exquisite of the yellow aniline dyes. Artificial Musk dissolved in Rectified Spirit, according to recognized printed formulæ is invaluable in its special therapeutical application.

A black, shiny, bitumenous residue is left after distillation at the bottom of the retort,—which when dissolved in Chloroform, furnishes Photographic Varnish. This residue should be removed while still hot, and the operator should be cautioned not to place fresh Amber, nor to commence a second distillation on the remains of a previous make.

Unequal expansion by heat is a fertile source of accident, against which it is difficult to guard. Lastly, let me advise that one direction of the Codex as far as we manufacturing English are concerned, should be disregarded—the rectification of the oil by subsequent distillation. Its physical characters are by this means altered; a lighter, red-grape, purple Oil is produced: its peculiar characteristic smell is partially destroyed, and the yield of Artificial Musk is (as far as I could judge from one experiment,) diminished; while for reasons to me unknown, the Oil becomes unsaleable as a commercial article.

I consider the crude unrectified Oil, carefully separated from the Acid Liquor and the Succinic Acid to be Oleum Succini Verum.

LARD, AND ITS PREPARATION FOR USE IN PHARMACY.

BY MR. EDWARD SMITH, TORQUAY.

One of the subjects suggested for investigation by the Pharmaceutical Conference is "The Best Means of Preparing Lard," and this must be my apology for bringing under the notice of the Conference what may be thought a very unimportant, and perhaps uninteresting subject.

The different Pharmacopœias of this country and the Continent have from time to time given very varying instructions with regard to the preparation of lard, some ordering the flare to be first cut up into small pieces, others not to be cut at all, some recommending the flare to be first well washed, others ignoring the washing, and so on, with various and differing directions as to straining, etc.

The Austrian and Prussian Pharmacopœias order the flare to be cut into small pieces, then washed, next gently heated until it becomes clear and transparent, lastly, strained through fine linen, and gently stirred until it becomes white and opaque.

The Paris Codex directs the membrane and red pieces to be removed from the flare, cut into pieces, beaten in a marble mortar, and heated in a water-bath until the whole is melted and clear, then strained, and stirred gently until it becomes white and opaque.

The London Pharmacopœia of 1824 directed hog's fat to be melted over a slow fire, and strained through linen.

The Pharmacopœia, 1836, directed the lard of the shops to be washed.

The Pharmacopœia, 1851, gave no instructions for its preparation, but sapiently suggested that salted lard should not be used.

The British Pharmacopœia ordered the fat to be cut into small pieces, and liquefied in a water-bath at 212° F., strained through fine linen, and again heated in the same way, until it became clear, and entirely free from water.

The last (1867) British Pharmacopœia modifies the process of the P.B. 1864, by directing the membranes to be removed as much as possible, the fat cut into small pieces, and broken up with the hands while a current of water is running through it, then as much water as possible drained away, the fat heated to 212° F., and strained through flannel, the residue being pressed while hot, it is then put into a steampan, heated to a little above 212° F., stirring constantly until it becomes clear, and entirely free from water, finally, strain through flannel.

The immense difficulty, I might almost say impossibility, of purchasing really good lard, capable of being kept a reasonable time without becoming rancid, induced me, some few years ago, to take to making my own lard, and after repeated trials, with more or less success, I find the following plan gives the best and most satisfactory results.

First cut the flare into pieces about the size of a walnut, and allow it then to stand for half an hour covered with water, then work it well up with the hands in five or six successive portions of water, next, having drained off as much water as possible, place the whole in a water-bath, and as soon as melted, strain through fine linen. In this first straining it will be impossible to get rid of all the water, so that after cooling, and pouring away the separated water, it is necessary to remelt in a water-bath, and, finally, carefully filter through paper in a warm closet.

Now, I do not know how much my plan may differ from those in ordinary use, but the three essential points to be remarked are—

1st. The repeated washings.

2nd. The re-melting.

3rd. The filtering.

I am not prepared to say if the washings remove any matter in a state of incipient decomposition, but this I do know, that if the washings be omitted, the lard will not keep good so long a time, as with the washings. With regard to the re-melting, the object of this is to get rid of the whole of the water, for if any of this be retained by the lard, it becomes a very fertile source of rancidity. Sometimes I have noticed a number of most beautifully coloured mould patches, some scarlet, or blue, pink, green, and indeed nearly a dozen different tints. I prefer this method of removing the water to the P.B. process of heating to 212° F. until it is expelled, simply because it is most important that the temperature applied should be as low as possible, and as lard melts at 100° F., a few degrees above this is all that is required. There is no difficulty in removing the last traces of water, inasmuch as the fat being specifically lighter than water, floats on the surface, and when filtering, the last dregs, which contain all the water, should be rejected.

The last and most important point is the filtering. Although straining through fine linen or flannel or felt, may be sufficient, when the consumption of the lard is rapid, and not required for any very especial purpose, yet I cannot too strongly insist that if lard be required of first quality for such purposes as ointments, cold cream, pomades, and so on, it is absolutely essential that it should be filtered through paper, or some body that will effectually remove the numerous particles of membrane and tissue, which are always to be found in imperfectly prepared lard, and which are the main and often sole cause of the rancidity of solid animal fats. This membrane or tissue has an unfortunate tendency to change, to become oxidized, and to set up a decomposing action through the entire mass of fat, resulting in the generation of fatty acids and rancidity; the presence of water materially expedites this decomposition, hence the necessity of re-melting to remove the last particles of water.

By following the process above indicated, I have succeeded in preparing lard, which will keep perfectly sweet and good for many months, even when the jar is constantly opened in the regular course of business, and even after the lapse of a year, the lard has been much sweeter than nine-tenths of that to be had from the best makers, at the best prices.

There is here a specimen of the filtered lard, and also a specimen of filtered lard made from flare in an active state of decomposition, and when in an extremely odorous condition; from which you will see that the process of preparation has nearly eliminated the rancidity, and it is in fact as good as a greater part of the best lards to be met with in commerce.

The germ of success lies in filtration. If we resorted to this much oftener than we usually do, not only as regards lard, but with many ointments and other analogous compounds, we should derive immense satisfaction from the great superiority of the results over mere straining through muslin, flannel, or felt.

To strain in these cases is to invite inferiority, to filter is to secure superiority, if not perfection.

In conclusion, I may say the cost of filtered lard varies from 10*d.* to 1*s.* 3*d.* per pound, according to the time of year, but of course the price may be modified in different localities by local circumstances.

THE APPLICATION OF SPECTRAL ANALYSIS TO PHARMACY.

BY W. W. STODDART, F.G.S., F.C.S.

Perhaps the most startling discoveries of the present day have been those which bear some relation to experimental physics, and more particularly to that branch which treats of optical phenomena.

Not very long ago the supposition of a close relationship between light and chemical action would have been ridiculed, and indeed was so. Now, however, the education of a chemical student must include the fundamental laws and properties of light. The chemist, in his analyses, is constantly invoking the aid of light in some way or other to help him in revealing the hidden secrets of nature. Sometimes the magic touch of a polarized ray will point to each individual granule of starch as it lies hidden by a multitude of other cells; nay, more, it will even tell him the name of the plant from which it was derived; and as if this were not enough, the solar rays themselves are actually compelled to reveal to the student their nature and the composition of the sun from which they radiate.

Within the last few years the labours of Kirchhoff, Bunsen, Sorby, and Huggins have been richly rewarded by fresh victories from the study of spectra analysis in chemistry, mineralogy, and astronomy. So much has been said and done lately by scientific observers in this direction, that one's attention is naturally attracted to other materials more intimately connected with every-day life.

It is therefore with the hope of suggesting a practical use of spectral analysis to your notice in a more immediate relation to our own profession, that I venture to introduce my present subject. I do so with diffidence, because I have as yet only just passed the threshold of experiment, but have already seen enough to indicate that a large field of inquiry and interest lies before us. I hope therefore these few remarks may prompt some one present to work out the numerous details necessary for a more complete elucidation of the subject.

Perhaps at the outset the question may arise, "What is spectral analysis?" I will, therefore, ask my more experienced brethren to bear with me while I give a short explanation before describing the method of working and showing some of its results.

Works on the subject are nearly all filled with the phenomena of the spectra of flames. In the beautiful work of Professor Roscoe just published, this is the case; only seven pages are devoted to what is commonly called "the absorption spectrum."

You will all remember that Sir I. Newton, by passing a ray of light through a *circular* opening and then through a glass prism, showed what has been known ever since as "the solar spectrum," the several rays being separated in the order of their refrangibility.

Light may be regarded as an ethereal medium in an intense state of vibration, varying in rapidity from 470 to 800 millions of millions per second. The waves of light, too, as might be expected, vary in size proportionably to the rate of vibration. For instance, a ray of light that gives to the eye an idea of red vibrates, at the rate of 477 millions of millions in every second of time, each wave measuring about the $\frac{1}{40000}$ of an inch. When the rate of vibration reaches 622 millions of millions, the wave measures only the $\frac{1}{51000}$ of an inch, and then produces the impression on the retina which we term blue. If the vibration exceeds 727 millions of millions, the eye cannot respond, and unless we use certain precaution, there is no visible colour produced. The vibrations, nevertheless, are there, because the chemical or actinic power is most intense.

Colour, then, is not a substance *per se*, but is a certain impression produced upon the retina, varying according to the intensity of vibration.

The red rays of the spectrum vibrate so weakly that they can only penetrate the thin end of the prism. Those of greater intensity are capable of penetrating the thicker portions of the glass, and are thereby refracted at a greater angle.

It was formerly thought that the three primary and pure colours of the spectrum were red, yellow, and blue, and that neither of these could be further resolved, the intermediate tints being formed by the commixture of different waves of light.

Later discoveries, however, of Professor Maxwell, Helmholtz, and Sir John Herschel seem to prove that the pure colours of the spectrum are *red*, *green*, and *blue*; that the mixture of yellow and blue cannot in any way be made to produce green, but one of red and green will form yellow.

In the year 1802 the far-sighted Wollaston, instead of passing the beam of light through a circular orifice, made use of a slit $\frac{1}{20}$ inch wide, the sides of which were parallel to those of a flint-glass prism. To his astonishment, instead of a continuous band of colours, the spectrum was crossed by six dark lines.

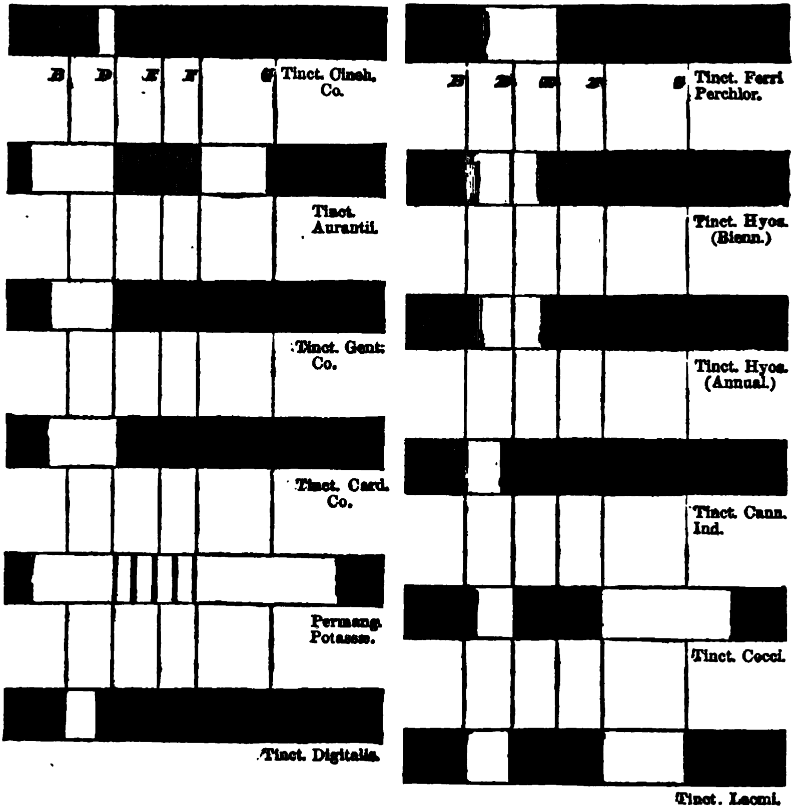
Thirteen years afterwards, M. Fraunhofer, of Munich, found that instead of six, he could map out more than six hundred, and discovered the important fact that these lines were always exactly constant, both in number and position, and consequently ever since they have been called "Fraunhofer's lines."

When the light from the sun, planets, or fixed stars is observed, these lines appear *black*, but when from the electric spark or an incandescent body, the lines are *bright*, but nevertheless occupy the same position as the dark ones.

These phenomena are now explained by the grand discovery of spectral analysis by Kirchhoff and Bunsen in 1860. They found that when certain metals were burnt in a colourless flame they produced bright lines, which perfectly coincided with certain of the dark ones noticed in the solar rays. For instance, sodium gives a bright yellow line which exactly fits Fraunhofer's line D.

Potassium produces two lines, one coincident with the solar line A, and the other at the commencement of the violet, and so on with the rest of the metals.

The extreme delicacy of spectral testing is almost incredible. It is nearly impossible often to get a flame free from the sodium line, so minutely universal is its distribution. Lithium only a few years since was supposed to be comparatively rare, because the quantity sometimes present was too small to be recognizable by the ordinary tests. Now we find it in almost everything. The spectroscope detects it in the ocean and mineral springs, in felspar and granite, in the ashes of plants and milk of animals, in the ash of a cigar and the juice of a grape.



The object of my present paper is not to explain the bright lines of incandescent bodies, but the appearances of solutions and other liquids when subjected to spectral observation.

When certain solutions are thus observed, they show that part of the transmitted light is absorbed, giving rise to shadow-like bands called "absorption bands."

These bands are constant and give a *spectrum peculiar to each preparation*, as I will presently endeavour to show by exhibiting and explaining the appearances of many of the well-known articles of the Pharmacopœia.

Most solutions when greatly diluted are said to be transparent, but this is only comparatively correct. Even air and water deprive the solar light of some of its rays during its passage through these media. The more coloured the solution, the more decided is the effect produced.

Thus an ammoniacal solution of cupric sulphate will transmit the red and violet rays, and absorb all the rest.

An ammoniacal solution of nickel will absorb the violet, but allow the blue and red to pass.

A solution of ferric sulphocyanide will only transmit the yellow and red, while the green, blue, and violet are totally absorbed.

Many substances forming nearly colourless solutions, yet afford very strong absorption bands, *e. g.*, the salts of didymium, manganese, hæmatine, or cruorine.

The absorptive powers of fluid spectra explain the bluish haze of a distant landscape and the green colour of deep water.

The spectroscope used in these experiments is one made by Mr. Ladd, of Beak Street. It is a very excellent instrument, reliable and easily worked. To use it, the eyepiece by itself is inserted into the tube of a microscope, the slit between the lenses opened and the object focussed. The tube containing the prisms is then replaced and the slit gradually closed till a good spectrum is obtained. Should any part of the spectrum not be clear, it must be focussed by means of the milled head attached to the eye lens.

An indispensable addition to the microspectroscope is a small side prism which enables the observer to see the spectra of two solutions at the same time.

Strict attention must be paid to the strength of the solutions under examination. If too strong, too much light will be absorbed, and instead of well-marked lines, large, cloudy and obscure bands will be seen.

Mr. Gladstone (Q. J. Chem. Soc. 1079) used wedge-shaped vessels, so that he could examine any thickness of the fluid, for the darker any solution is, the thinner must be the stratum, and the weaker the solution, the deeper the stratum. This will be apparent from the diagram.

I prefer a bit of glass tube, because more generally at hand and easily made. A common 1 oz. or ½ oz. phial will answer well, or, what is still better, the little tube bottles used by the homœopathic chemist. The tubes I usually employ are about ⅜ths of an inch in diameter.

The solution or tincture is diluted till the spectrum is most advantageously seen. The rate of dilution varies from two to ten times or more. For instance, Tinct. Hyosc. Bienn. would require three or four times its volume of proof spirit, while Tinct. Cannab. Ind. is so dense and opaque to light that ten vols. of spirit would be necessary to show its beautiful spectrum to the greatest advantage. As the dilution proceeds, the finest and faintest lines disappear, and afterwards the darkest. A few trials will soon point out the most effective strength to be employed.

The advantage arising from the use of the wedge-shaped cells is now apparent, because by raising or lowering the stage of the microscope, a thicker or thinner stratum of the solution may be viewed.

The constancy of the spectra is very great if only ordinary care and a good spectroscope be used. When a microscopist has once found out the most comfortable and advantageous position of his instrument and illuminating apparatus, he had better always use the same. I always prefer a paraffin lamp mounted on a sliding stand, which I place to the right of my microscope, and have the red end of the spectrum to the left, simply because, from force of habit, it seems to suit my spectroscope better, and by so placing them I can at any time set to work in a few minutes.

Some of the spectra of medicinal preparations, as Tinct. Hyoscyami, Tinct. Cannab. Ind., Tinct. Lobeliæ Ætherea, are extremely beautiful, and will vie with any of the mineral salts commonly employed as show objects.

Microspectroscopic observations promise well to detect adulteration and substitution, for hardly ever do the spectra of any two articles appear exactly the same. The smallest discrepancy is immediately seen when the spectra are placed side by side by means of the additional prism.

It cannot be doubted that the use of the microspectroscope is of the greatest assistance in many analytical researches. It must not be expected that every mixture will show separately the several constituents by their individual peculiarities. This is only true in a few instances; cochineal may be at once detected in Tinct. Cardam. Co. and Tinct. Cinchon. Co.

The colouring matter of blood will show its own bands when mixed with cochineal. The spectrum of a tincture made with the leaves of the biennial henbane differs entirely from that of the annual.

It is often the task of the geologist to say whether a clay contains the protoxide or peroxide of iron or both. Spectral analysis will determine the question at once, and point out the protoxide, peroxide, or magnetic oxide.

Another instance is when factitious syrup of violets is sold. The spectroscope will at once tell whether the colouring matter is litmus or red poppy.

Time will not allow me to give more instances of the utility of spectral analysis, but as I before stated, it is a very extensive field for future observation, and a source of great interest and pleasure for many an hour of recreation and instruction.

The following are spectra of many of the Pharmacopœial preparations most generally used.

Inf. Rosæ Co.—Green extended over yellow, blue and violet quite absorbed. When alum is added, the green is totally absorbed, forming a very dark, broad band; part of the blue and all the violet are also absorbed.

Inf. Calumbæ.—Violet and half the blue absorbed.

Inf. Rhei.—Violet, blue, and part of the green absorbed.

Tinct. Aloes Barb. (Simp.).—Only the red portion of the spectrum transmitted, all the remainder absorbed.

Tinct. Aloes Socot. (Simp.).—Green, blue and violet absorbed.

Tinct Aloes Capens. (Simp.).—Green, blue and violet absorbed.

Tinct. Arnicæ.—All the violet and a small part only of the blue absorbed.

Tinct. Aurantii.—The green extended over the yellow, while half the blue and all the violet are absorbed.

Tinct. Calumbæ.—Violet, blue and two-thirds of the green absorbed.

Tinct. Cannab. Indic.—A beautiful spectrum showing the dark chlorophyll band strongly at line B. The green extended over yellow, and all the blue and violet absorbed.

Tinct. Cardam. Co.—Violet and blue absorbed. When diluted, the strong cochineal line is visible at E.

Tinct. Cascarillæ.—Violet, blue and one-third of green absorbed.

Tinct. Curcumæ.—Blue and violet absorbed.

Tinct. Chiraytæ.—As Tinct. Cascarillæ.

Tinct. Cinchonæ Co.—Yellow obscured by extension of green; all the spectrum beyond line E absorbed..

Tinct. Cinnamomi.—From halfway beyond D to E darkened, all beyond E absorbed.

Tinct. Cocci.—Violet only absorbed, the yellow supplanted by green. Two well-marked lines appear, a thin one at D and a broad one at E; a very beautiful spectrum.

Tinct. Digitalis.—Extremely handsome spectrum, exhibiting a magnificent chlorophyll line at B, and a narrow but well-marked line at D. The yellow darkened, blue and violet absorbed.

Tinct. Ferri Perchloridi.—All beyond E abruptly cut off.

Tinct. Hyoscyami (biennial).—The violet and two-thirds the blue absorbed. The green darkened and extended into the yellow. This handsome spectrum is crossed by four very distinct lines. The first a very dark chlorophyll at B. The second just beyond D is narrow. The third is a much stronger one at E. The fourth is a very broad dark band at F at the commencement of the blue.

Tinct. Hyoscyami (annual).—This spectrum is very different to the last, and cannot be mistaken for it. The chlorophyll line at B is not so decided; the second and third lines so weak as to be barely visible, and the fourth absent. Half the green is darkened, part of blue and all the violet absorbed.

Tinct. Gentianæ Co.—Like that of tinct. aurantii, with the exception that *all* the blue and violet are absorbed.

Tinct. Iodi.—Impervious to light, except in a thin stratum. When diluted, the blue and violet are absorbed, and part of green much darkened.

Tinct. Jalapæ.—Last third of green and whole of blue and violet absorbed.

Tinct. Krameriæ.—Yellow and green nearly absorbed, blue and violet quite so.

Tinct. Lavand. co.—Yellow shaded by green, and all beyond F intensely absorbed.

Tinct. Lacmi.—A beautiful spectrum. All absorbed beyond G. Two distinct lines; a thick one between D and E and a thin one on E.

Tinct. Lobeliæ.—Green and first half of blue darkened, the remaining blue and violet absorbed.

Tinct. Lobel. Æth.—Magnificent spectrum. Very strong chlorophyll line; a fine one at D., and two very strong ones at E and F.

Tinct. Lupuli.—Green darkened; blue and violet absorbed.

Tinct. Nuc. Vom.—Similar to tinct. aurantii.

Tinct. Opii.—Red advanced over yellow, green darkened, blue and violet absorbed.

Tinct. Camph. co.—Violet absorbed.

Tinct. Quiniæ.—Green extended over yellow, blue and violet absorbed.

Tinct. Rhei.—Green contracted and darkened, blue and violet absorbed.

Tinct. Sennæ.—Only red transmitted, the rest being absorbed.

Tinct. Stramonii.—Violet and half the blue absorbed.

Tinct. Sumbul.—Violet and blue absorbed.

Tinct. Ferri Acetatis.—Green, blue, and violet abruptly cut off by absorption.

Sol. Cupri Ammon. Sulph.—Red and violet only transmitted.

Dec. Aloes Co.—Only red transmitted. When diluted, three times green, blue, and violet absorbed.

Ext. Belæ liquid.—Green very much darkened. Blue and violet absorbed.

Ext. Cinchonæ flav. liq.—When much diluted, only the red is transmitted, all the rest being absorbed.

Ext. Cinch. pallid. liq.—When much diluted, red and orange transmitted, all the rest absorbed.

Liq. Arsenicalis.—Yellow, green, blue, and violet abruptly absorbed.

Liq. Ferri Perchlor.—Blue, green, and violet strongly absorbed.

Liq. Ferri Pernit.—Blue and green and violet strongly absorbed.

Liq. Ferri Persulph.—Green very much darkened, but not entirely, as in the other two iron solutions. Blue and violet entirely absent.

Sol. Potass. Bichrom.—Spectrum only visible to two-thirds the distance between E and F. All the remainder absorbed.

Sol. Pot. Permangan.—Well-known and exquisite spectrum. Five well-marked lines between F and D. The first thinner than the other four.

Syr. Rhœados.—Yellow, green, blue, and violet absorbed, even when much diluted.

Vinum Ferri Citratis.—Extreme end of red at commencement of spectrum green; blue and violet absorbed. Red and orange only transmitted.

Vin. Ferri.—Red and orange only transmitted. It is a peroxide of iron spectrum.

Vin. Ipecac.—Green darkened, blue and violet absorbed.

ON SYRUP OF PHOSPHATE OF IRON.

BY THOMAS B. GROVES, F.C.S.

In the latter part of 1867 I found, in my cellar, a bottle of syrup of phosphate of iron that had lain long unobserved, and had acquired a dark sherry colour. A considerable amount of a precipitate of a red colour had formed in it, and encrusted the bottom of the vessel. I therefore commenced some experiments, with the view of ascertaining the exact nature of the precipitate, of devising means for removing the colour of the syrup, and of preventing the re-acquisition of such colour.

I was not unmindful of Mr. Umney's paper on the same subjects, but, after reading it carefully, determined on proceeding independently.

The precipitate was composed of two layers,—the upper layer crystalline in structure, red-brown on the upper, white on the under surface; the under layer white and amorphous. The two separated by washing, reacted similarly, proving themselves to be a combination of peroxide of iron with ordinary phosphoric acid, and agreeing chemically with the white precipitate produced artificially in the syrup by the use of oxidants.

Analysis furnished a formula closely corresponding with ($Fe_2O_3, PO_5 + aq.$), the acid being a little in excess. The substance was probably not of a definite character, so comparisons were instituted between it and various phosphates of peroxide of iron prepared artificially as follows:—

No. 1. By adding phosphate of soda in excess to perchloride of iron.

No. 2. By adding perchloride of iron to excess of phosphate of soda.

No. 3. By adding perchloride of iron to excess of phosphate of soda, previously acidulated with phosphoric acid.

No. 1 was a body of indefinite character, the nature of the phosphate necessarily varying with the varying conditions of the mixture—acidity, neutrality, or alkalinity, at different stages of the precipitation. It presented the appearance of a fawn-coloured powder. It was not analysed.

No. 2 was in colour pale foxy-red. Analysed, it gave the formula ($5\,Fe_2O_3, 6\,PO_5 + aq.$).

No. 3 was colourless. After long-continued washing with water, it still reacted acid to test-paper. Analysed, it gave the formula ($2\,Fe_2O_3, 3\,PO_5 + aq.$)

These experiments were suggested by reading Mr. R. Warington's paper on the Phosphates of Calcium (Journ. Ch. Soc. vol. iv. N.S.).

It seems then that the oxide deposited by the syrup corresponded closely with No. 2, the analogue of octocalcic phosphate.

The colour of the syrup was found to be readily discharged by addition of permanganate of potash, a fact of course of no practical value, but suggestive of the cause of coloration. After being thus treated, it deposited rapidly perphosphate, the syrup at the same time regaining its dark colour.

Shaken with purified animal charcoal it was almost completely decolorized, the amount of oxidation, as indicated by deposition of perphosphate, being small. This simple process might, I think, be legitimately employed to restore a coloured syrup of phosphate of iron to saleable condition, subject of course to certain limitations.

In preparing syrup of phosphate of iron I deviate somewhat from the B.P. instructions. The precipitate obtained by the use of cold solutions is so tedious to wash that I venture to use half the quantity of boiling water, and maintain the boiling till the hydrate is decomposed and the precipitate becomes sandy. It may then be washed by decantation first, finally on a filter with great rapidity and little exposure to oxidation. There is however a loss of phosphate, the yield being 80 grs. only instead of 96 grs. This I allow for by using one-fifth more of ingredients. The phosphoric acid I use is prepared from amorphous phosphorus, and is four times the strength of the acid of the Pharmacopœia. By careful treatment the solution of phosphate for one Pharmacopœia quantity may be got into the volume of 4 oz., so that it is then only necessary to add 8 oz. of syrup to complete the article. Of a syrup so prepared, several 1 oz. quantities were (Dec. 11, 1867) set aside in 2 oz. corked phials, exposed to diffused light in my laboratory.

No. 1 = the pure syrup. ferri phosph., B.P.
No. 2 = do. + 4 grs. pot. chlor.
No. 3 = do. + 4 grs. pot. nit.
No. 4 = syrup half the strength as regards sugar as syrupus, B.P., not differing in other respects from No. 1.
No. 5 = syrupus + acid. ph. dil.
No. 6 = syr. ferri phosph. + 4 grs. sodæ hypophosph.

Feb. 8, 1868. Nos. 2 (which had deposited nearly the whole of its phosphate immediately on the addition of the chlorate), 4, and 5, were practically colourless. Nos. 1, 6, and 3, were coloured, the last less so than the other two. It was also distinguished by a deposit of pinkish-white perphosphate.

Aug. 12, 1869. No. 1 (the pure syrup) was much the darkest of the series, and had deposited a little perphosphate.

No. 3 (containing nitrate of potash) was about half as dark in tint, but had deposited more perphosphate.

No. 6 (containing hypophosphite of soda) was of about the same as No. 3, but had deposited less perphosphate.

No. 4 (containing only half as much sugar as syrupus, B.P.) was much paler than either of the others,—in fact usable.

No. 5 (syrup of phosphoric acid) had acquired a pale straw tint.

No. 1, treated on the 12th inst. with animal charcoal, lost the greater portion of its colour.

The conclusion I derive from these experiments, as to the cause of the coloration, is this,—that it is mainly due to the formation of caramel, under the joint influence of phosphoric acid and of proto-phosphate of iron undergoing oxidation on a dense syrup. In order to check this process, I recommend the use of less sugar, and to facilitate the preparation of the phosphate, the use of boiling water, etc., in the manner I have already indicated.

THE ASSAY OF IPECACUANHA.

BY PROFESSOR ATTFIELD, PH.D.,

DIRECTOR OF THE LABORATORIES OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

A few months ago a specimen of ipecacuanha was sent to me for assay by Messrs. C. G. Meier and Co., merchants, of London. It was a portion of six cases, about 700 lbs., received from Bogotá, the capital of New Granada.

The appearance of the sample enabled me at once to state that the article was not true ipecacuanha (*Cephaelis Ipecacuanha*), but a variety known as striated ipecacuanha,—the roots of *Psychotria emetica*, the pieces being "neither annulated nor undulated, but longitudinally striated." Whereas, however, striated ipecacuanha is commonly somewhat soft, but pulverulent and more or less brittle, the specimen under examination was soft and elastic, like gutta-percha.

Striated ipecacuanha was analysed in 1820, by Pelletier, who found it to contain 9 per cent. of emetina, the active emetic principle. The same chemist obtained 16 per cent of emetina from true ipecacuanha. The process he adopted was as follows:—Make a tincture of the weighed ipecacuanha (one of root, in 3 parts English rectified spirit, and 2 water), evaporate to dryness, dissolve residue in water, and, after filtering the liquid through magnesia (to saturate acids and liberate combined emetina), again evaporate to dryness; weigh the residue. This process has answered very well in my hands for the assay of all ordinary samples of ipecacuanha—true or false—giving apparently a tolerably pure product; but applied to the sample under consideration, it furnished no less than 56½ per cent. of what evidently was not pure or even slightly impure emetina. This result led to a detailed examination of the article, the end of which was, that in the place of starch usually largely present in both true and striated ipecacuanha, and of which no trace was found, there occurred 5·4 per cent. of grape-sugar, and 34 per cent. of cane-sugar (or a substance soluble in water, and convertible in grape-sugar by ebullition with acids). In Pelletier's process of analysis this saccharoid matter would necessarily accompany whatever emetina might be present, and, if not noticed, be reported by an analyst as emetina itself. So far as known, however, more than a mere trace of sugar has not, until now, been noticed.

It next became necessary to devise a process for the estimation of emetina, which should not be liable to error on account of the presence of sugar. This was found to be impracticable by the ordinary principle of separation by solvents. The old process was therefore simply supplemented by the quantitative estimation of the nitrogen in the evaporated aqueous solution of the alcoholic extract of the ipecacuanha; the absence of albuminoid or other nitrogenous matter than emetina was thereby insured, while all non-nitrogenous matter was excluded. Instead, therefore, of weighing the final product of Pelletier's process, above given, a weighed portion of it is mixed with soda-lime and burnt in the usual manner; and from the amount of nitrogen produced, the proportion of emetina calculated, the known percentage of nitrogen in the pure alkaloid (4·3) being the only important datum to be remembered.

Working by this process, a sample of true ipecacuanha, from the museum of the Pharmaceutical Society, yielded 17 per cent. of impure (Pelletier's) emetina, but only 10½ of pure emetina; while a specimen of striated ipecacuanha, from the same source, gave 10½ of extract, containing pure emetina, equal to 6½ per cent. of the root. The striated ipecacuanha, sent by Messrs. Meier, affording, it will be recollected, 56½ per cent. of what has hitherto been regarded as emetina, but which should be termed 'saccharoid extract,' contained only 2¾ per cent. of the pure alkaloid. It will thus be seen that through some unknown influence of soil, climate, temperature, etc., this psychotria had produced sugar where starch is usually found, and had secreted less than half the average proportion of active principle.

The question remains as to what can be done with striated ipecacuanha when loaded with sugar? Its well-marked, soft, elastic, and striated characters would cause its rejection by all followers of the British Pharmacopœia or French Codex. Its physical condition would also prevent its being employed as an adulterant of true ipecacuanha either whole or powdered. The solubility of emetina in an aqueous solution of sugar would also preclude its use as a source of the pure alkaloid,—at all events by the process of the Codex. *Emétine médicinale* (*Emétine brune*) might be prepared from this root, but the product would be so contaminated by sugar as to be inert in ordinary doses. Allowance being made for the weakness of the root, it might be converted into the French preparations of tincture or syrup (a solution of the extract, or evaporated tincture). Clearly the importation of this root should be strongly discouraged. It is of no direct value, and is likely to be employed only as a clumsy adulterant of two or three of the European preparations of true ipecacuanha.

The tabular results of the above and other analyses of striated and of true ipecacuanha are appended.

CEPHAELIS IPECACUANHA.

Richard and Barruel.	
Emetina	16·0
Wax and fatty matter	1·2
Gum and salts	12·4
Resinous matter	1·2
Starch	53·0
Albuminoid matter	2·4
Fibre	12·0
Gallic acid (traces) and loss	1·8
	100·0

Magendie and Pelletier.	
Emetina	16·0
Wax	6·0
Fatty matter	2·0
Gum	10·0
Starch	42·0
Fibre	20·0
Gallic Acid	traces.
Loss	4·0
	100·0

Impure Emetina	17·0 per cent.	Attfield.
Pure Emetina	10·5 „	

PSYCHOTRIA EMETICA.

a. Brittle. *Pelletier.*	
Emetina	9·0
Fatty matter	12·0
Fibre, Gum, and Starch	79·0
	100·0

Attfield.	
Impure Emetina, per cent.	10·5
Pure Emetina, per cent.	6·4

b. Elastic. *Attfield.*	
Emetina (pure)	2·75
Grape Sugar	5·39
Cane Sugar (or substances soluble in water and convertible into sugar by ebullition with acid)	34·00
Albuminoid matter	3·02
Moisture, Fibre, Fat, and Salts	54·84
	100·00

(*End of the First Days Proceedings of the Conference.*)

The papers read on the second day will appear in our next number.

ORIGINAL AND EXTRACTED ARTICLES.

ON THE PROCESS FOR PREPARING JAMES'S POWDER.

BY MICHAEL DONOVAN, ESQ.,

HONORARY MEMBER OF THE COLLEGE OF PHARMACY OF PHILADELPHIA, ETC. ETC.

More than two centuries ago a medicine was in repute made by burning shavings of hartshorn or of bones along with sulphuret of antimony, and continually raking or stirring them together until the sulphur was burnt off, and the powder had become light grey or ash-coloured. It was known as Lile's and Schawanberg's fever powder, and was much used about the middle of the seventeenth century.

In 1746, Dr. Robert James, a physician of talent and eminent learning, finding the powder to be an excellent medicine, and having made a trifling alteration in the process of preparing it, secured a right to the exclusive manufacture by a patent. The conditions of obtaining a patent were that the petitioner shall make oath that he is the sole inventor, and that he has deposited in Chancery a true and precise specification of the mode of producing the article for which he seeks the monopoly. But Dr. James was not the sole inventor, nor did his specification disclose his process; nor could the powder, thenceforward called "James's Powder," be prepared by the means which he pretended were sufficient: he conceived that his best security was secrecy. Dr. James, therefore, virtually had no patent right.

For a long series of years nothing was certainly known of the composition of the powder until the investigation was undertaken by Dr. George Pearson, who in 1791 gave an account of it to the Royal Society, in a communication which was published in the 'Philosophical Transactions.'

A medicine founded on the experiments of Pearson, and intended as a substitute for James's Powder, was introduced into the London Pharmacopœia of 1788 under the name of Pulvis Antimonialis. It was accordingly used by apothecaries as a succedaneum on account of the high price of the real James's powder; but it never obtained the confidence of practitioners; and hence the origin of the adjunct used in prescriptions, *verus*. Indeed it never deserved their confidence, being, as directed in the Pharmacopœia, an almost inert substance.

Dr. Pearson informs us that all the parcels of James's powder that he had seen would be called white powders, but no two of them were white in the same degree; they had either "a shade of yellow or stone colour, and none were perfectly white, or so white as some specimens of Pulvis Antimonialis of the shops. Some parcels had a brassy taste, others no taste. Dr. Pearson having formed a powder from bone-ashes and crude sulphuret of antimony possessed of properties similar in kind to every one of those ascertained to belong to James's powder, with scarcely any difference in the degree of them, considered that they were the same. Beside this synthetic proof, he adduced the evidence of analysis, and made experiments in proof before competent judges. He says, "It is very probable that no degree or duration of fire applied in open or close vessels alone can produce a calx of the same kind as that in James's powder, nor, perhaps can such a powder be composed by fire applied in close vessels to calx of antimony mixed with calcined bone; but if calx of antimony, duly calcined, be mixed with calcined bone, and exposed to air, in a due degree of fire, for a sufficient length of time, and then a still greater degree of fire be applied to it in close vessels, such a compound may be formed as James's powder. . . . No such white powder is formed by a mixture of any calx of antimony and bone ashes, exposed to any degree of fire in close vessels, without previous exposure to fire and air."

Pearson concludes from all his experiments that James's powder consists of phosphate of lime and a peculiar calx of antimony, different from all others, composing a triple compound in the proportion of about 57 parts of calx of antimony and 43 of phosphate of lime, or a double compound of the same elements.

The admitted medical efficacy and the high price of James's powder induced the various colleges of physicians to introduce into their pharmacopœias a process for imitating it. They took for their guide the investigations of Pearson, and dictated formulæ which apparently did not much differ from the prescription of that accomplished physician. This preparation, called Pulvis Antimonialis, proved an utter failure, having neither the composition nor the medical effects of the powder of James. In the manipulation of the manufacturers, the chief object seemed to be the production of a powder as white as snow,—the very quality which it ought not to possess if intended to resemble the powder of James, which at that time was always slightly yellow, or cream-coloured, or even stone-coloured, as we learn from Pearson.

I made a number of trials of the process of the three British Pharmacopœias (1816), but could not obtain the powder white like the Pulvis Antimonialis of the druggists, or like the James's powder then in use. The roasted materials introduced into a skittle-pot, with another inverted, both luted together, were maintained at a white heat in an air-furnace for two hours. When cold, the included matter was found converted into a dense, close-grained, buff-coloured mass, as hard as limestone and very heavy. Being again heated to whiteness, it became a deep olive-brown mass, harder than before.

I repeated the process on new materials, heating them similarly in a different air-furnace, and obtained an olive-brown semivitrified mass with dark streaks, harder than the former mass, a small portion of a white enamel appearing on the side of the skittle-pot.

It was plain, therefore, that the heat was too high, and that the use of the air-furnace, originally directed by Pearson, and adopted in all the pharmacopœias, was an error. I therefore repeated the process, and placed the skittle-pot containing the powder in a common fire-grate, heaping coal round and over it. In due time the skittle-pot became red-hot, and in this state it was kept for an hour and a half or two hours. When cold, it was found to be a snow-white powder, covered by a congeries of crystals a quarter of an inch thick. Thus one important fact was ascertained.

On repeating this method several times, and using an iron ladle in a common coal fire, the resulting powder, instead of being uniformly white, proved in some instances to be buff-coloured; but occasionally the snow-white powder was obtained. As the failure was not due to the final heating, it must have originated while the materials were in the iron ladle. Various experiments convinced me that the heating in the ladle is the most important part of the whole process; and at length it became evident that when the heat, accompanied by continued stirring or raking, was maintained until the powder changed from dark brown to a light yellowish-grey, the final heating in a skittle-pot brightened it, or the greater part of it, to a perfect white. The light yellowish-grey colour here mentioned will be best understood by comparing it to the dust of a Bath brick, often used for cleaning dinner knives, but a little paler.

But to heat the powder while in the ladle fully to this colour, but not beyond it, was the difficulty.

During these experiments I perceived that when the quantities of the two ingredients were as large as ten ounces of each, the resulting powder when taken from the skittle-pot never proved white, but generally dark grey, interspersed with a deep yellow-coloured portion. This fact pointed to the conclusion that the ladle was too small for that quantity of materials, that due raking during the heating was impeded, and that the desulphuration was accordingly imperfect. A hemispherical ladle capable of holding a gallon being procured, a charge of ten ounces of each was placed on the fire and continually raked for several hours, at first without any intermission, and at length with short intervals of rest, until the proper colour was attained. This matter, being finely powdered, was introduced into a proportionately large skittle-pot and exposed to a well-built coal fire in a common grate, and kept red-hot for three hours. When cold, the top portion proved to be a thin cake of dark-coloured matter; under that was a small quantity of yellow portion; and the remainder was very nearly snow-white.

On trying so large a charge as sixteen ounces of each ingredient in the large ladle it proved to be unmanageable; the carbon at an early period ignited; the mass softened, collected into dark-coloured lumps, which could not be raked notwithstanding much effort. Finding it impracticable, I took out the charge when cold, and being powdered, it was returned into the ladle in four different portions, each of which was separately raked while heating, until the proper colour appeared to be attained. The whole of the powder being charged into a very large skittle-pot, was heated in a well-built and well-supplied fire for several hours. The powder, when cold, was found to be yellow throughout; for the proper proportion between the quantity of matter and the containing iron ladle had not been observed, the necessity of which was thus amply proved. It is a certain fact that a large quantity in a small ladle will never afford a white powder.

By reversing the conditions of the process, that is, by acting with due care on a small quantity of materials in a very large ladle, we are pretty sure of bringing the charge safely through its first stage of danger. Thus when four ounces of hartshorn-shavings and the same weight of sulphuret of antimony were well raked in a ladle of the capacity of a gallon, until the requisite colour was attained, and then heated in the skittle-pot for an hour or more in the usual manner, the powder almost always turned out white, generally snow-white, but sometimes with the cream-coloured tinge noticed by Pearson. Under the condition of small charges in a very large ladle, the snow-white colour was sometimes produced by a very hot fire in fifteen minutes after the skittle-pot had become red-hot, but with a fire not so hot, a much longer time was necessary.

After following up these experiments for some time, I found that much trouble and anxious watching would be saved by raking the bone-shavings, without the sulphuret of antimony, until the ammoniacal fumes, the sulphur, and the extremely fetid gases had been expelled; and making proper allowance in subsequently apportioning the antimony.

Adopting this method, six ounces of calcined hartshorn-shavings mixed with four ounces of sulphuret of antimony, were raked over a graduated fire, in my largest ladle, until the powder had assumed the usual yellowish-grey hue. It was then transferred to a small skittle-pot, which, being placed on a stand in a large fire-grate, coals were built round and over it, and a cover applied. The skittle-pot was kept red-hot for six hours. When cold, it was cautiously examined. No part of the partially cohering powder was white; it was almost all dark grey, but much darker towards the top; the portion at the very top was full of particles of metallic antimony, and even small masses of it which had assumed a somewhat rounded form. The dark grey colour of the whole mass seemed to be caused by the intermixture of thousands of minute shining particles of the metal with the phosphate of lime. Round the mouth of the skittle-pot and on its cover was a small accumulation of white powder, some of which was minutely crystallized, and was deposited by the dense white smoke which issued from the skittle-pot every time the cover was removed, and ceased when it was replaced. At the bottom of the skittle-pot was a small quantity of yellow powder. It was remarkable that although many processes had been conducted in this fire-grate in all respects in the same manner, except that the fire had been maintained for two hours only, the powder had always turned out white, a significant fact which seemed strongly to indicate that the heating had been continued too long, and perhaps too intensely. It also agreed with the two cases already described, in which the intense heat of the furnace during two hours had produced the same injurious effect. It corresponded also with the fact already stated, that a portion which had been adequately raked was rendered perfectly white in the crucible by fifteen minutes' red heat in a strong fire, the same effect not being producible by a weaker heat for a much greater length of time.

In due time, after finishing a quantity of my James's powder, I was anxious to know something of its medical effects, and with this view gave it to several friends for trial, and used it also in my own person. But in most of the cases tried, the powder had a rough action, producing sickness, and sometimes vomiting. I had used equal quantities of bone-ashes and sulphuret of antimony as directed by Pearson, and followed in the pharmacopœias, but this proved to be too much of the sulphuret. I therefore made new trials of the process with half the quantity of antimony. In these proportions the difficulty and uncertainty of the process were greatly diminished; the powder almost always turned out snow-white, and when used as a medicine in due doses was for the most part easily borne in the *primæ viæ*. But it is very probable that Dr. James employed a less ratio of sulphuret of antimony even than one-half; he sometimes prescribed his powder in doses of ten grains every six hours, and even twenty grains at once, without much effect on the stomach, bowels, or skin.

There is a slight objection to conducting the process of roasting in an iron ladle, and raking with an iron rake; minute particles of protoxide of iron are found in the resulting powder, very small in quantity, but unpleasant in appearance. This may be remedied by substituting an earthen dish, and it was such a vessel that Pearson used in his experiments; but the iron ladle is far more convenient.

I believe that James's powder may be prepared in the following manner:—Let any quantity, say eight ounces, of bone-shavings be heated in an earthenware dish or an iron ladle over a moderate fire, and frequently stirred or raked during its incineration. When burnt to a black powder and ammoniacal fumes are no longer perceptible, let four ounces of levigated sulphuret of antimony be thrown in, and let stirring with an iron rod from the bottom and all parts be immediately commenced and rapidly continued, so that the sulphureous fumes shall have a *free* issue and be no longer discoverable. This is most important.

During the desulphuration the heat should be kept as low as may be sufficient to cause the discharge of the vapour. In the dark, the powder should show a thin, blue flame, as faint as possible; but as often as this flame disappears, the heat should be gently raised until it again appear. But neither the bottom of the ladle nor the powder should be allowed to become red-hot while vapours are discharged, or while there is blue flame from the burning sulphur. At length even a higher heat will not expel any more sulphur. During this roasting, innumerable bright spiculæ of metallic antimony will sparkle through the powder. The ladle and its contents may be allowed to become red-hot for two or three minutes, the raking being continued. If the process has been rightly conducted, the powder, at this stage, will have assumed the colour of the dust of Bath brick.

The contents of the ladle should now be powdered, sifted, transferred to a skittle-pot, its cover laid on, and the whole placed on a stand in the fire-grate, and lumps of coal are to be built round and above it in such a way as to permit a free current of air to pass through. The skittle-pot and its contents will thus be brought to a uniform bright red-heat, which may be maintained at that degree for about an hour, more or less, according to the quantity. The skittle-pot is then to be taken from the fire, and should the powder prove to be pure white, except perhaps a thin layer at the top, it only requires to be reduced to the finest powder in an earthen mortar, and sifted through a fine silk sieve. Should the powder not prove white, it may be returned to the skittle-pot, placed in the fire as before, and continued in a state of ignition for half an hour, according to the judgment of the operator.

In the first part of the process, the sulphuret of antimony is slowly decomposed; its sulphur burns, and exhales in the state of sulphurous acid. The antimony, now insulated, appears in small brilliant spiculæ, which, as the heat increases, gradually disappear. In the second part of the process, when the roasted matter is heated in the skittle-pot, the antimony, while in the state of vapour, combines with oxygen, and is converted into protoxide, part of which crystallizes in the upper part of the skittle-pot, or escapes as a thick, white smoke. The heat increasing, the protoxide is converted into antimoniate of antimony, which remains mixed or combined with the phosphate of lime.

If the heat be raised much above that of a good coal fire in a common grate, the mass will slightly cohere, and in some parts will become yellowish and vitreous. If the heat be still higher, as that of an air-furnace, the powder will change to an olive-brown mass as hard as stone.

All the time the powder is in the skittle-pot and very hot, protoxide of antimony is escaping or crystallizing on the cover, and hence the difference discoverable by analysis, and by the medical effects of different parcels of James's powder. It therefore becomes an important and difficult question, what is the criterion by which the completion of the process is to be judged? I know of no other than this, that when the powder is white it is fit for use: any greater or longer-continued heat I believe to be injurious. It may not always happen that the whole charge will prove white; when it does not, the whitest parts are to be separated, and, if worth the trouble, the remainder may be slightly calcined again. But should the first charge, after being duly heated, prove dark-coloured throughout, it cannot be improved and may be rejected.

Before concluding this paper, I may mention some facts relative to James's powder which were communicated to me a great many years ago by a very old gentleman who had been an apothecary in Dublin, Mr. William Speer, the clever inventor of a well-known hydrometer for ascertaining the strength of excisable spirituous liquors. It was as follows:—

In 1758 Dr. Anthony Relhan, a Fellow of King and Queen's College of Physicians in Ireland, practised in Dublin, and was one of the physicians of Mercer's Hospital. The Fellows refused to meet him on account of his employing James's powder in his practice, although the decree against antimonials by the French College of Physicians had been long before repealed. In consequence, he wrote to Dr. James, who advised him to go to London to practise, which he did. Becoming intimate with Dr. James, the latter, during several interviews, communicated the process practically to him, his patent-right having expired. In 1760, Relhan returned to Dublin, and being acquainted with Mr. Ducros, an eminent apothecary, then residing in William Street, he communicated the process to him confidentially. Ducros prepared the powder in presence of Relhan, and it was repeatedly administered in Mercer's Hospital and other places, with exactly the effects of James's powder. Mr. Speer was apprentice to Mr. Ducros, and on his death in 1768 succeeded to his business: the widow gave up to Mr. Speer a MS. book containing the account of the Pulvis Jacobi, which he retained ever after. The following is the process:—"Take one pound of hartshorn-shavings; boil them in a large quantity of water, and dry them by a slow fire. Rub them to a fine powder. Then put an equal weight of the hartshorn and powdered crude antimony into a crucible, and set it on a moderate fire, stirring it with a long rod of iron for six hours or as long as it smokes."

I have repeated the above process several times, but never could produce the snow-white powder with which we are familiar; the resulting colour being generally that of Bath brickdust already described, but on a few occasions paler. Yet the statement of Mr. Speer is I think supported by facts. Dr. Pearson says, "It is probable that this powder was made for several years with merely the heat necessary to carry off the sulphur and calcine the bone, in an open vessel, and consequently it was of a light clay or ash colour. Its property of turning white in a greater degree of fire appears to have been a subsequent discovery." But in this greater degree of fire the powder discharges copious fumes of protoxide of antimony, and becomes less active as a medicine; and at length assuming the hard, vitreous state, it loses all medical power. On one occasion, when I had obtained the powder from the iron ladle paler than usual, I took several doses of it without any striking effect, which proves at least that, in this state, it is innoxious; its taste was most disagreeable, whereas the white powder is tasteless. I imagine that in this form the powder would prove to be in its most active state; that it was in this form that Lile's and Schawanberg's powder obtained its celebrity; and that the subsequent process of whitening it by fire deteriorates its medical effects more or less according to its degree and continuance. But it is of little use to insist on this part of the subject in the present day. If the whitening process in the skittle-pot were relinquished, and the light ash-coloured powder from the ladle were accepted, we should probably have an efficacious medicine of uniform or little-varying strength.

Clare Street, Dublin.

CHLORODYNE *versus* LIQ. CHLOROFORMI CO.

BY A PROVINCIAL.

In the present stage of the above controversy, it may be both pertinent and opportune to record in the columns of the Journal, an illustrative case which has a direct bearing upon the question.

But before stating this case, I desire to guard myself against the supposition, that anything I may hereafter say should be construed as approving, or sanctioning a practice, which has become very prevalent of late, viz. that of 'borrowing' (stealing might seem to some persons a more appropriate designation) the title of a medicine, or of a preparation, which, either by the good fortune, or the exertion, or the expenditure of the proprietor has, at length, attained a certain reputation with the public. When any specific appellative has become the distinct and distinctive representative of a valuable property, and in the eyes of an irreflective public IS that property, then, to seize upon that title, to trade upon it, and convert to one's own use the fruits of another man's labour and luck, seems, to an understanding which has not been educated in the ethics of 'the period,' nothing short of piracy.

While speaking of the morality of this course of proceeding, I am reminded that, some three or four years ago, a reprint appeared in the Journal of a paper on the subject of "Pharmaceutical Ethics;" in which paper, if my memory serves me, this particular class of cases (as well as some others of equal and kindred interest) was NOT discussed; although it might have been expected that the writer would not have missed the opportunity of questioning and denouncing so flagrant a breach of Ethics, whether Pharmaceutical or Social.*

But, to proceed with my case, which I divide into three stages.

Stage 1. In the year 1862, taking advantage of a visit to the Exhibition, a patient consulted, under my auspices, an eminent London physician, who, among other recommendations, advised the use of chlorodyne. For about three months I supplied Dr. Collis Browne's, which was used with the happiest results, and was continued till the dose had reached 35 minims, twice a day.

Stage 2. For reasons into which it is not necessary to enter, I was now induced (having full discretion in the case) to furnish a bottle by another maker, in such wise that the patient was quite unaware of any difference. When applied to for the next bottle, I inquired how the last had been liked, and the reply was to the effect that it was slightly preferred to any which had preceded it; upon which I explained what I had done; and for three years afterwards, this second preparation was adhered to.

Stage 3. By this time the dose had been increased to such an extent, that the cost of the medicine had become a serious tax, and I was invited to devise some means of economizing it. With this view, I determined to prepare the remedy myself, upon the basis of a form which had appeared in the Journal, but with the omission of the peppermint and capsicum, which were rather objectionable to the patient. The effect of this preparation was precisely the same as of that taken in the second stage. After an interval of a week or two, I omitted the tincture of Indian hemp; the effect remained the same. Then I left out the hydrocyanic acid, still with no difference in the result. Having arrived at this point, I discarded the treacle, leaving only the morphia, chloroform, and spirit. In this form the patient continues to use the medicine up to the present day; and the dose has remained nearly stationary for the last three or four years. I should add, that this patient is of a very susceptible temperament, and keenly alive to slight differences in the taste and action of medicines.

The inference I draw from this case is, that the efficacy of all the various chlorodynes, including also their original and prototype, Dr. Collis Browne's, is due almost entirely to morphia, slightly (and only slightly) modified by the chloroform; that chlorodyne is only a round-about and disguised mode of administering morphia; and that the same, or very nearly the same effects would be produced by the equivalent dose of morphia. And here, I beg to call attention to the circumstance, that Dr. Browne, in his ingenious but not very grammatical † or convincing "WARNING," nowhere denies this. He contents himself with affirming that his chlorodyne "never contracts the pupil," leaving—I should rather say *desiring*—it to be inferred that, THEREFORE, it does not contain this ingredient. But, methinks, the learned Doctor 'doth protest too much' when he says that the effects of his chlorodyne are *opposite* to those of the Liq. Chloroformi Co., and by implication, to those of the imitative chlorodynes; and that whereas the one "would save," the others have the 'reverse' 'results,' i. e. would destroy the patient. After our long experience of both medicines, this is really *too* strong an appeal to our credulity, and can only tend to injure his own cause. The utmost that, from his own point of view, he is entitled to assert is, that his preparation produces effects (less or more) *different*.

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* *Ethics, whether Pharmaceutical or Social.*—I have heard members of our trade express bitter resentment because they were not accepted by society as professional men, *i. e.* as 'gentlemen.' But while, as a body, we sanction, or by our silence *seem* to sanction such sordid doings, with what assurance can any of us individually demand such a social status?

† *Not very grammatical.*—Ex. gr. the following very remarkable sentence, which contains more errors than it has clauses, "To call two things by the same name, having opposite effects, cannot consistently be a sound procedure in therapeutics, still less in logic." What is meant by "the same name, having opposite effects"? That it calls up pleasant associations in the mind of one person, and unpleasant in that of another? Or, perhaps, what the Doctor really means to say is, "To call by the same name, two things having opposite effects," etc. Here, again, we are puzzled. Is *each* of the two things endowed with opposite effects? or, are the effects of the one opposite to those of the other? If the latter be his meaning, then to call them by the same name is a *contradiction*. But what has 'consistency' to do with the matter? and how can there be any question whether a contradiction is a "sound procedure"? and why is it more allowable in therapeutics than in logic? These strange 'inconsistencies' puzzle plain people, and shake their faith in the correctness and validity of Dr. Browne's reasoning.

But I cannot admit either his premiss, viz. that his chlorodyne does not (under any circumstances) cause contraction of the pupil; nor his conclusion, that *therefore* it does not contain morphia.

Not the premiss, because the evidence for it is, as yet, entirely of a negative character; since I believe he has been so fortunate, that there is no case upon record of an excessive or poisonous dose of his preparation. Should such an event unhappily occur, we have no assurance that contraction would not ensue.

Not the conclusion; since, even admitting that contraction did not follow, it is still quite possible that his chlorodyne may contain an ingredient which tends to expand the pupil, and thus the two antagonistic forces,—*contractile* and *expansive*,—would balance and neutralize each other.

Therefore Dr. Browne's assertion, even if it were correct to the fullest extent, still affords no proof that his chlorodyne does not owe its chief efficacy to morphia.

And a long course of observation has furnished me with numerous corroborative proofs of my position, that chlorodyne, both original and imitative, is little, if anything, more than morphia disguised and adorned.

I submit this leading case for what it may be thought worth, and have no doubt that when the line of inquiry is once fairly opened, many gentlemen will be able to bring forward experiences of one kind or another to bear upon and elucidate a question, which is not only interesting in itself, but (if my position is correct) possesses the further and larger interest of showing how both the profession and the public may be attracted by a specious name, and carried away by a delusive imagination.

THE BORACIC ACID SPRINGS IN TUSCANY.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Under the impression that some of your readers might like to see a short account of these interesting springs, I have jotted down a few memoranda which I made on the occasion of a visit to one of them in the summer of last year.

Six in number, and all of volcanic origin, the springs are situated high up the mountains, nearly midway between Florence and Rome. The scenery during the greater part of the journey from Florence is very beautiful, the road passing through vineyards and olive plantations, varied by large copses of myrtle bushes. In the immediate neighbourhood of the springs, however, it is as uninteresting as can well be imagined, the large amount of sulphurous gas evolved very possibly affecting the vegetation to a greater or less extent. The boracic acid is found, mixed with other matter, in three different states:—

1. Mixed with mud, forming a thick paste, almost solid.
2. As a thick, muddy solution, very much resembling Thames water at low tide.
3. As a fountain of the solution, very highly concentrated, and so pure that there is not the slightest smell of any compound of sulphur with it. This is the more remarkable, as in both the other forms the presence of sulphur is strongly indicated by the smell.

Of the pasty mixture there were only three or four vats or wells; whilst of the more liquid preparation there were about twelve or fourteen,—varying in diameter from 30 to 50 or 60 feet.

The clear solution was thrown up to a height of about 30 feet (on some days rather higher, and on some not so high); but to prevent waste, a huge cone-shaped basket is fastened over it, a short distance above ground, by means of which it can be the more easily guided into any one of the numerous vats and coolers waiting to receive it.

The muddy liquid mixture is drained off into large tubs holding about 150 gallons each. Upon cooling, the very impure acid crystallizes round the sides of the tub, whence it is afterwards removed to be purified.

From 2688 to 3253 casks of commercially pure boracic acid are sent away from this place yearly, each cask weighing on an average 300 kilos. At a rough calculation this would give us 1,893,900 kilos, or 1691 tons, as the quantity annually sent into the market from this one source. As there are five other sources in various parts of the mountains, all of them in full action, and two or three much larger than the one I have seen, the sum total would amount to, at least, 10,500 tons collected per annum. I say "at least," for I have put the average lower than it really is, and I have also supposed that each spring gave the same average; instead of which, two or three of them, as I have said before, are much larger than the others. Three thousand men and boys in all, are employed in the works, the men with their families forming a village by themselves a short distance away from the springs. Each village, too, is perfect in its way, finding its own church, etc., and having manufactories of cloth, paper, tools, etc. Almost everything, in fact, is home made, and, as a rule, by no means badly made. Should any of my "brother chips" ever find themselves at Florence, I would strongly recommend a visit to one of these interesting places. They will be amply repaid their extra trouble and expense.

At the first glimpse of the spring it appears very like a small volcano in full eruption. The flames are wanting, it is true, but everything else is there; the peculiar cone-like appearance of the wells, with their seething, bubbling contents, and the volumes of steam and gases which issue from the ground in every direction, accompanied by the peculiar rumbling sound which is always to be heard there, all combine to produce an effect upon the visitor which is not soon forgotten.

Apologizing for the length to which I have drawn my jottings, I remain, yours truly,

Florence, August 19, 1869. W. B.

CHLORAL, A NEW HYPNOTIC AND ANÆSTHETIC.

Dr. Oscar Liebreich, Teacher of Therapeutics and Medical Chemistry in the University of Berlin, has recently communicated to the Medical Society of that city the result of some experiments on the administration of chloral to man and animals.

Chloral was discovered about thirty years ago by Liebig, who formed it by the treatment of absolute alcohol with dry chlorine gas.* In an anhydrous state, it is a colourless volatile liquid, emitting a vapour very irritating to the eyes, having a sp. gr. 1·502 and boiling at 202° Fahr. Its composition is represented by the formula $C_4Cl_3HO_2$, or C_2Cl_3HO. When exposed to moist air, it becomes converted into a crystalline substance, which is a hydrate of chloral. The same substance also results when anhydrous chloral is directly mixed with a small proportion of water.

Hydrate of chloral is soluble in water in all proportions. It is unchanged by acids, but when treated with an alkali, is immediately decomposed into chloroform and formic acid. It is this property of setting free chloroform in the presence of an alkali, that has led Dr. Liebreich to consider whether chloral might not be used with advantage as a remedial agent. Most of the experiments which have hitherto been reported, have been made upon rabbits or frogs, and only two or three on the human subject. When a small quantity of aqueous solution of chloral was administered by subcutaneous injection to a rabbit, the animal was thrown into a tranquil sleep of some hours' duration. We understand that the results of numerous experiments on the human subject are about to be communicated by Dr. Liebreich to the medical public.*

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* Gmelin's 'Chemistry,' vol. ix. p. 200.

ON SOME MEANS FOR PREVENTING THE BUMPING OF BOILING LIQUIDS.

BY HUGO MÜLLER, F.R.S.

The annoyance which arises from the bumping of certain liquids when submitted to distillation or boiling has often attracted the attention of chemists, and various means have been proposed for its prevention.

The value of pieces of platinum, charcoal, burnt clay, and other porous bodies for this purpose is well known, and, under certain circumstances, they are efficient enough; yet there occur very frequently cases in the laboratory when these means are unavailable.

About two years ago Pietro Pellogio (Fresenius, Zeitschr., vi. Jahrg.) proposed a very simple contrivance, which was stated to act very satisfactorily indeed. It consisted of a moderately wide glass tube, passing through the cork of the tubula of the retort, and nearly reaching the bottom of it, the upper end being bent at right angles and drawn out into a capillary tube.

Having occasion to try the efficiency of this arrangement, I came to the conclusion that it was quite ineffective, and shortly after, G. Hager (Pharmac. Centralhalle, Bd. 9) confirmed the negative results I obtained.

Quite recently E. Winkelhofer (Ber. d. Chem. Gesellsch. Berlin, p. 194, 1869) proposed for the same purpose the application of an electric current, which, through the incipient decomposition of the liquid and consequent evolution of gas, causes the ebullition to become quite regular and steady. Dufour, for another, with another object in view, had made use of the same means.

The application of the electric current unfortunately presupposes that the liquid to be distilled is a sufficiently good conductor of electricity; and, if this is not the case, necessitates the introduction of such substances as shall cause the liquid to become a conductor. This circumstance, therefore, limits very considerably the use of this otherwise efficient arrangement, and it is on this account that I venture to bring under notice some other means which I have tested in a variety of cases, and which invariably proved satisfactory.

In cases where the introduction of any foreign matter into the liquid about to be distilled is undesirable, I introduce through the cork in the tubula of the retort a glass tube, which is drawn out to a long capillary tube and pressed tightly to the bottom of the retort. The upper end of the glass tube is connected, by means of an india-rubber tube, with a generator of carbonic acid, or hydrogen, or a gas-holder containing air, and whilst the distillation is going on, one of these gases is passed in a slow but continuous current through the liquid. Under these conditions, all bumping is avoided, and the distillation proceeds with the utmost facility.

For ordinary purposes, however, I have found it still more convenient to introduce into the liquid about to be distilled a small fragment of sodium amalgam or, in cases where the liquid is acid, a small piece of sodium-tin. Methylic alcohol is well known to be one of the most difficult liquids to distil, yet, on the introduction of a minute piece of sodium amalgam or sodium-tin, it can be distilled without the slightest inconvenience. I found on one occasion that more than 400 grammes of methylic alcohol distilled over with perfect steadiness, and without exhausting the activity of a fragment of sodium-tin, weighing not more than 0·060 gramme.

It is, perhaps, hardly necessary to mention that the action of sodium amalgam and sodium-tin is due to a minute but continuous disengagement of hydrogen taking place during the process of distillation.—*Chemical News.*

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* Since the foregoing was written we have received a pamphlet of sixty pages, by Dr. Liebreich, entitled *Das Chloralhydrat, ein neues Hypnoticum und Anæstheticum und dessen Anwendung in der Medicin*, of which we hope to give a brief notice in our next Number.

GROUNDS OF BELIEF IN THE VALUE OF MEDICINES.

Sir William Jenner, in an address delivered before the Annual Meeting of the British Medical Association at Leeds, made the following remarks on the use of medicines in the treatment of disease:—There are special reasons why the members of our profession, the practitioners of medicine, should, from time to time, sum up the gains which medicine has been making as a practical art. For in the daily practice of our profession so much occurs to damp our spirits; so many cases of difficulty arise in which the remedies of our art are doubtful; so many cases in which the practical difficulties in the way of diagnosis are insuperable; and so many cases in which, the diagnosis being clear, we know that we are impotent to cure; so many cases in regard to which our apparently well-founded expectations of effecting a cure prove vain, that even the most hopefully minded must be permitted to doubt if medicine be advancing as a practical art. Many entertain scepticism as to the value of medicine as an art, and especially as to the remedial power of drugs. "I trust you will not cast a doubt on the efficacy of medicine," said a distinguished member of our profession. "They don't believe much in drugs at this hospital," wrote a reporter to one of our medical journals. I desire to repudiate scepticism in regard to medicine. I believe as confidently in the power of the physician to treat disease successfully as I did when clinical clerk to one of the first practical physicians of his day. Extended knowledge and accumulated experience have only increased my confidence in the remedial powers of our art. Nor do I believe that others upon whom the imputation of scepticism has been cast are less firm believers than myself in the value of treatment. Modern research has shown that a large number of acute diseases occurring in previously sound persons, have a tendency to terminate in the suspension of health even although no drug be given. This is fact—knowledge—not scepticism. Modern observation has also shown certain acute diseases, formerly supposed to be of indefinite duration, run a definite course,—that is, end spontaneous at a certain date from their outset; and therefore the conclusions as to the efficacy of drugs to cut short these diseases—conclusions drawn before their definite duration was known—were founded upon false premises, and consequently were not trustworthy. All this is surely fact—knowledge—not scepticism. Again, advances in knowledge have frequently been attended by a more correct appreciation of the mode of action by drugs; and the expression of this has not unfrequently been most erroneously taken as an evidence of scepticism. Thus, if I believe that saline aperients do not act as I formerly supposed they did, namely, by increasing the escape of watery matter from the radicles of the portal vein, I am not in the least shaken in my belief that the symptoms which I attribute to over-distention of the portal vein are relieved by their action; or that their action is followed by a disappearance of watery fluid from the peritoneal cavity and from the cellular tissue. Again, if it should be considered, as proved by experiments on dogs, that mercurials did not produce increased secretion of bile in man, it would not throw doubt on the establishment of a great flow of a yellowish-green coloured fluid from the bowel after the administration of a mercurial to man, and the relief of many depressing symptoms which follows. A man's bilious headache, as it is termed, would be none the less certainly cured by mercurial treatment, even though it should be shown to the satisfaction of the whole profession that mercury does not increase the secreting power of the liver. Our mode of explaining certain effects in curative medicine would be changed, but not the facts themselves. My conclusion then is, that although with regard to the virtues of this or that particular drug, and the mode of action of this or that particular class of remedies, there is, no doubt, and always will be, difference of opinion—the evidence that satisfies A. being insufficient, from the constitution of his mind, to satisfy B.,—yet with regard to the value of drugs in the abstract, and the value of treatment, there is really little difference of opinion amongst physicians well informed as to the present state of medical knowledge, and of equal experience in practice. I say amongst men equally well informed: let me illustrate my meaning. I was one of three who met in consultation concerning a case of apoplexy. In the opinion of one of my colleagues, the only treatment to be adopted was as follows, namely, to place the patient in a recumbent position, with the head and shoulders raised; to enforce absolute rest; to keep the bowels so far loose as to prevent straining; to apply cooling substances to the head in the event of heat of the part occurring; and to support the patient with light nutritive food, having regard to his habits. The third gentleman protested against the modern system of doing nothing—was anxious to bleed, to purge, to blister, etc. Now the difference of opinion in this case was not due to scepticism; but on the one side to justifiable faith, that is, faith justified by knowledge; and, on the other, to absence of that knowledge. The case was one of degenerative change—retrograde metamorphosis—of arteries. One had become so rotten that its wall had given way, its contents had escaped, a clot had formed, and by its mechanical effects given rise to the symptoms. The heart shared in the degenerative changes. The bleeding had ceased. To those who understood the real nature of the case, the lesions present, and the mode in which they had been produced, in short, the pathology of the case, belief in the efficacy of so-called active treatment appeared to be not only unjustifiable faith, foundationless faith, faith without knowledge, but to be faith in opposition to knowledge,—which in medicine is the worst form of scepticism, inasmuch as it implies doubt of truth, and a belief in error—doubt which might prevent the saving of life—a belief which, embodied in practice, might kill.—*The Lancet.*

MEANS OF PREVENTING COAL MINE EXPLOSIONS.

Mr. Bessemer, in a communication to the 'Times,' August 11th, on this subject, states that he is now engaged in investigating the action of combustion under excessive pressure in furnaces where the flame is bottled up like steam in a steam-boiler, by which means the heat is intensified in the ratio of the pressure employed. In one modification of these furnaces the workmen operate in a large iron room, where the pressure of the atmosphere is greater than it would be at a depth of ten miles below the surface of the earth, and when the temperature, under ordinary circumstances, would be such that no one could endure it for an hour. These furnaces, by a simple arrangement, may be supplied with thousands of cubic feet of air per minute, as cool as or cooler than the surrounding atmosphere.

Mr. Bessemer proposes to apply this principle to coal mines. He observes, "The miner, enclosed all day between black masses of coal above and around him, requires a powerful light to see what he is doing—a light that never fails, that never goes out, that never requires trimming, and, above all, a light that effectually prevents the mixture of air and gas which pervades all coal mines from entering the flame and becoming ignited. Now, these are precisely the conditions obtained by combustion under pressure, which offers to the miner a source of the most brilliant light wholly inaccessible to the inflammable air of the mine. As a simple illustration of the fact, let us suppose a small iron box, a little larger than a policeman's lantern, having a thick plate glass, or a bull's-eye, on one side of it; in the lower part is a common gas-burner, supplied by a pipe from a gasometer above ground; the supply of air to support combustion is arranged in a similar manner, and supplied under pressure from aboveground; a small aperture is made in the top of the lantern for the escape of the products of combustion. Now, if the air and gas are supplied to this light under a pressure of, say, 1 lb. per square inch, the light would be brilliant, and the escape from the orifice at this pressure (or even far less) would prevent the possibility of any external gases entering and becoming ignited. In this way every gallery in a mine may be lighted like a workshop, to the great comfort and cheerfulness of those whose whole lives are spent in the cheerless gloom of these dangerous workings."

In reference to the above proposal, Mr. David C. M'Vail, house surgeon to the Alnwick Infirmary, states that more than a year ago an article in the 'Lancet' drew his attention to the subject, and he then proposed a method which he thinks superior to that described above. His plan was to illuminate mines with hermetically sealed lamps, to which fresh air might be brought by tubing, either from above ground or from some safe part of the main gallery, the spent air being carried away in the same manner. The experiments had been tried several months ago with a hermetically sealed lamp, in which coal gas was kept burning, to reach which the fresh air had to pass through a tube 110 feet in length and of half inch bore, and to leave which the spent air had to pass through a tube of similar bore and 50 feet long,—the air was forced in by means of common bellows. Mr. M'Vail thinks that this mode of lighting mines has the following advantages:—

"1. The lamp being hermetically sealed, and there being no connection whatever between the air inside the lamp and the air in the mine, no explosion could possibly occur. In the case of Mr. Bessemer's lamp, in spite of the current of air leaving the lamp, traces of the atmosphere of the mine would certainly find their way into the lamp, and should any cause, even for the fraction of a second, interfere with the current, the lamp would become charged with the atmosphere of the mine, and on being relighted an explosion might occur.

"2. It would give any amount of light that might be desired.

"3. As one lamp hung up in a proper place would illuminate an entire set of workings, each miner would not, as at present, be hampered by carrying a small, flickering, troublesome, dangerous lamp, hardly able to do more than just render darkness visible."

HYDROGENIUM; THE RELATION OF HYDROGEN TO PALLADIUM.

(*Concluded from p.* 80.)

4. *Magnetism.*—It is given by Faraday as the result of all his experiments, that palladium is "feebly but truly magnetic;" and this element he placed at the head of what are now called the paramagnetic metals. But the feeble magnetism of palladium did not extend to its salts. In repeating such experiments, a horseshoe electro-magnet of soft iron, about 15 centims. (6 inches) in height, was made use of. It was capable of supporting 60 kilogs., when excited by four large Bunsen cells. This is an induced magnet of very moderate power. The instrument was placed with its poles directed upwards; and each of these was provided with a small square block of soft iron terminating laterally in a point, like a small anvil. The palladium under examination was suspended between these points in a stirrup of paper attached to three fibres of cocoon silk, 3 decimetres in length, and the whole was covered by a bell glass. A filament of glass was attached to the paper, and moved as an index on a circle of paper on the glass shade divided into degrees. The metal, which was an oblong fragment of electro-deposited palladium, about 8 millims. in length and 3 millims. in width, being at rest in an equatorial position (that is, with its ends averted from the poles of the electromagnet), the magnet was then charged by connecting it with the electrical battery. The palladium was deflected slightly from the equatorial line by 10° only, the magnetism acting against the torsion of the silk suspending thread. The same palladium charged with 604·6 volumes of hydrogen was deflected by the electromagnet through 48°, when it set itself at rest. The gas being afterwards extracted, and the palladium placed equatorially between the poles, it was not deflected in the least perceptible degree. The addition of hydrogen adds manifestly, therefore, to the small natural magnetism of the palladium. To have some terms of comparison, the same little mass of electro-deposited palladium was steeped in a solution of nickel, of specific gravity 1·082, which is known to be magnetic. The deflection under the magnet was now 35°, or less than with hydrogen. The same palladium being afterwards washed and impregnated with a solution of protosulphate of iron of specific gravity 1·048, of which the metallic mass held 2·3 per cent. of its weight, the palladium gave a deflection of 50°, or nearly the same as with hydrogen. With a stronger solution of the same salt, of specific gravity 1·17, the deflection was 90°, and the palladium pointed axially.

Palladium in the form of wire or foil gave no deflection when placed in the same apparatus, of which the moderate sensitiveness was rather an advantage in present circumstances; but when afterwards charged with hydrogen, the palladium uniformly gave a sensible deflection of about 20°. A previous washing of the wire or foil with hydrochloric acid, to remove any possible traces of iron, did not modify this result. Palladium reduced from the cyanide and also precipitated by hypophosphorous acid, when placed in a small glass tube, was found to be not sensibly magnetic by our test; but it always acquired a sensible magnetism when charged with hydrogen.

It appears to follow that hydrogenium is magnetic, a property which is confined to metals and their compounds. This magnetism is not perceptible in hydrogen gas, which was placed both by Faraday and by M. E. Becquerel at the bottom of the list of diamagnetic substances. This gas is allowed to be upon the turning-point between the paramagnetic and diamagnetic classes. But magnetism is so liable to extinction under the influence of heat, that the magnetism of a metal may very possibly disappear entirely when it is fused or vaporized, as appears to be the case with hydrogen in the form of gas. As palladium stands high in the series of the paramagnetic metals, hydrogenium must be allowed to rise out of that class, and to take place in the strictly magnetic group, with iron, nickel, cobalt, chromium, and manganese.

5. *Palladium with Hydrogen at a high Temperature.*—The ready permeability of heated palladium by hydrogen gas would imply the retention of the latter element by the metal even at a bright red heat. The hydrogenium must, in fact, travel through the palladium by cementation, a molecular process which requires time. The first attempts to arrest hydrogen in its passage through the red-hot metal were made by transmitting hydrogen gas through a metal tube of palladium with a vacuum outside, rapidly followed by a stream of carbonic acid, in which the metal was allowed to cool. When the metal was afterwards examined in the usual way, no hydrogen could be found in it. The short period of exposure to the carbonic acid seems to have been sufficient to dissipate the gas. But on heating palladium-foil red-hot in a flame of hydrogen gas, and suddenly cooling the metal in water, a small portion of hydrogen was found locked up in the metal. A volume of metal amounting to 0·062 cubic centim., gave 0·080 cubic centim. of hydrogen; or, the gas, measured cold, was 1·306 times the bulk of the metal. This measure of gas would amount to three or four times the volume of the metal at a red heat. Platinum, treated in the same way, appeared also to yield hydrogen, although the quantity was too small to be much relied upon, amounting only to 0·06 volume of the metal. The permeation of these metals by hydrogen appears, therefore, to depend on absorption, and not to require the assumption of anything like porosity in their structure.

The highest velocity of permeation observed was in the experiment where four litres of hydrogen (3992 cub. centims.) per minute passed through a plate of palladium 1 millim. in thickness, and calculated for a square metre in surface, at a bright red heat a little short of the melting-point of gold. This is a travelling movement of hydrogen through the substance of the metal with the velocity of 4 millimetres per minute.

6. *Chemical Properties.*—The chemical properties of hydrogenium also distinguish it from ordinary hydrogen. The palladium alloy precipitates mercury and calomel from a solution of the chloride of mercury without any disengagement of hydrogen; that is, hydrogenium decomposes chloride of mercury, while hydrogen does not. This explains why M. Stanislas Meunier failed in discovering the occluded hydrogen of meteoric iron, by dissolving the latter in a solution of chloride of mercury; for the hydrogen would be consumed, like the iron itself, in precipitating mercury. Hydrogen (associated with palladium) unites with chlorine and iodine in the dark, reduces a persalt of iron to the state of protosalt, converts red prussiate of potash into yellow prussiate, and has considerable deoxidizing powers. It appears to be the active form of hydrogen, as ozone is of oxygen.

The general conclusions which appear to flow from this inquiry are, that in palladium fully charged with hydrogen, as in the portion of palladium wire now submitted to the Royal Society, there exists a compound of palladium and hydrogen in a proportion which may approach to equal equivalents.* That both substances are solid, metallic, and of a white aspect. That the alloy contains about 20 volumes of palladium united with a volume of hydrogenium; and that the density of the latter is about 2, a little higher than magnesium, to which hydrogenium may be supposed to bear some analogy. That hydrogenium has a certain amount of tenacity, and possesses the electrical conductivity of a metal. And finally, that hydrogenium takes its place among magnetic metals. The latter fact may have its bearing upon the appearance of hydrogenium in meteoric iron, in association with certain other magnetic elements.

I cannot close this paper without taking the opportunity to return my best thanks to Mr. W. C. Roberts, for his valuable co-operation throughout the investigation.

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* Proceedings of the Royal Society, 1868, p. 425.

PROSECUTIONS UNDER THE PHARMACY ACT.

Sale of Oxalic Acid.—At Gloucester, James Dancey was charged under the new "Pharmacy Act" with selling poisons without having the name and address of the seller affixed.

Mr. Taynton, who prosecuted, stated that the present Act was an amendment of the Act of 1852, and afforded greater protection to the public, inasmuch as it prevented unqualified persons selling poisons or practising as chemists. The defendant had, for some time past, resided in Gloucester, and had fitted up a shop for the sale of drugs, and carried on the business of a chemist. He put up a board in his shop, announcing that he was "James W. Dancey, from Birmingham, assistant-surgeon. Medical advice given gratis." The Act contained provisions in regard to druggists who had been in business before its passing, enabling them to become members of the Pharmaceutical Society. The defendant, becoming aware that he was summoned, wrote to London, and asked to be admitted a member of the Society; but, fortunately, he was obliged to write the letter himself, which at once raised the suspicion that he was not a proper person to have the dispensing of prescriptions, and inquiries were at once made, which resulted in this prosecution. The present charge was for selling oxalic acid without the name and address of the seller, which was clearly proved, and Mr. Horsley, analytical chemist, Cheltenham, analysed the contents of the packet which had been purchased of the defendant, and found it to be oxalic acid.

The bench fined the defendant £1. 1*s*., £2. 2*s*. for Mr. Horsley's expenses, and 12*s*. the costs of the court, total £3. 15*s*., or one month's hard labour. The fine not having been paid, the defendant went to prison.

Sale of Strychnine.—At the Police Court, Cheltenham, on Monday, April 10th, Mr. William Hands, chemist, was summoned, on the information of Mr. Supt. Day, under the 17th section of the "Sale of Poisons Act," for having sold twopennyworth of strychnine to a man named William Jones, without having entered, in the form prescribed by the Act, the address of the person to whom the poison was sold. Mr. E. T. Brydges, solicitor, appeared for the defendant.

Mr. Brydges said he thought he might save the time of the court by at once admitting that Mr. Hands did not make an entry of the "address" of the William Jones who was said to have purchased the poison in this case. The present proceedings were important, not only to Mr. Hands, but as affecting the chemists generally; and he believed that when he had laid before the Bench the provisions of the Act, they would be of opinion that they could not convict, or that, if they did, the smallest coin of the realm would be a sufficient penalty. The information was laid under the 17th section of the Act, which made it illegal to sell any of the poisons included in schedule D, or such poisons as might be from time to time added to them, to any person whom the person selling did not know, unless he was introduced by a person whom he did know, and the sale was to be entered in a form supplied in schedule F. There were not the usual words added "or to the like effect," but chemists were bound down to the precise form. Turning to the form referred to, and which, from the precieseness of its character, appeared to be equal to a statutory declaration of the Act, he pointed out that though the 17th section required that the "name and address" of the purchaser should be registered, there was no provision for the entry of the address in the form scheduled, the column for the name being headed "name of the purchaser," and not "name and address of the purchaser," the words in the section under which the compaint was laid. It seemed as though if Mr. Hands had inserted the address of the purchaser he would have been liable to a penalty for not conforming to the form of register, while he was held to be liable for not entering the address in conformity with the Act. He thus appeared to be on the horns of a dilemma, liable to penalty in either case. There had been certain text-books issued for the guidance of chemists, and Mr. Brydges pointed out that one in the possession of his client, signed by the Secretary of the Pharmaceutical Society, did not call attention to the necessity of registering the address; and he might state that he had referred to the registers kept by seven chemists, in only one of which was the address entered as required. He did not know in what way Mr. Hands had been selected as the subject of proceedings which should make the requirement of the Act on this point known, but he did think that some notice should have been given to the chemists generally before this step was taken. Mr. Brydges having read the entry of the sale of the poison in this instance, from which it appeared that the poison was sold for the destruction of vermin (and which was in proper legal form with the exception of the disputed point), proceeded to say that one of the main objects of the new Act was to give a ready means for the detection of crime; and yet, to point out another omission of the Act, there was no provision compelling chemists to show their books. Mr. Hands had at once shown his, not knowing but that he had thoroughly complied with the law; but if chemists were to be made the subject of these proceedings, the very purpose of the enactment would be defeated, and chemists would refuse to show their books when called upon.

In reply to a question from the Magistrate, the Clerk said that by the 17th section it was provided that the address should be entered, which had not been done. There could be little doubt that it was intended that the address should be given in the column for the name. Mr. Brydges had no doubt that was the intention of the Act, but the form prescribed was calculated to mislead, there being no column for the address. Notice should have been given to chemists before any proceedings had been taken. Mr. Brydges remarked on the faulty construction of the Act; any chemist might, if he chose, give away poison to any one without any entry. The Magistrates, after consultation, desired the defendant and other chemists of the town should conform to the Act in the particular in question. The information was then dismissed.

Sale of Syrup of Poppies.—On Tuesday, July 6th, before Thos. Richardson and Thos. Richards, Esquires, Wm. Crussell, grocer, was charged by Inspector Robert Mitchell with selling certain drugs in violation of the Pharmacy Act. Police-constable Thacker, Benwick, deposed that on the 14th ult. he went to the shop of Wm. Crussell and asked for a pennyworth of syrup of poppies, and that he was supplied with the same. Mr. W. Richardson appeared for defendant. Mr. P. Langman, Pharmaceutical Chemist, Chatteris, stated that he had examined the contents of the bottle and found that it contained syrup of poppies, the manner of making which he described. Mr. Richardson contended that not one of the articles supplied by his client contained any poison. Mr. Sturton, wholesale druggist, of Peterborough, supplied Mr. Crussell with those drugs, but they were only substitutes. Mr. Sturton, who was present, was asked if he informed his customers that the drugs were only substitutes, and not genuine articles? he replied that he did not. A second charge was then gone into. Police-constable Thacker stated that on the 4th ult. he also purchased twopennyworth of paregoric from defendant, who entered the sale in his book, but placed no label on the bottle, giving as a reason that it contained no poison. Mr. Langman said that he analysed the paregoric, and found that it contained some opium. Police-constable Thacker further deposed that he purchased on the same date sixpennyworth of laudanum, and that it was put in a vial bearing a label with the word poison on it, but no name or address.—Mr. Richardson said that as there was nothing in any drugs produced contrary to the Act, and as the case was not a wilful one, he asked that the second case might be carried to the Queen's Bench.—The Bench said that on a former occasion when Mr. Crussell was before them, he promised not to sell such articles again. After a short consultation, the Bench decided that the defendant should be fined 40*s*. in each case with costs, and allowed Mr. Richardson's request in the second case.—The costs in the first case amounted to £1. 7*s*. 7*d*.; in the second, to £1. 12*s*. 7*d*.; and in the third, to £1. 7*s*. 7*d*. Total fines and costs, £10. 7*s*. 9*d*.

Sale of Essential Oil of Almonds.—On Saturday, July 24th, Dr. Hardwicke held an inquest in Broad Street, Bloomsbury, on the body of Thomas Smith, who was found dead in a coffee-house. It was proved, from a *post mortem* examination, that death had been caused by essential oil of almonds, which had been obtained from Mr. F. Wilson, of Old Street, St. Luke's, a surgeon and chemist, who had sold it to the deceased, on the pretext that it was required for confectionery. Mr. Wilson said that he seldom sold poisons, but in this case he was taken off his guard by the rational manner of the applicant. He produced a small memorandum book in which were several entries of poisons having been sold. The coroner observed that he had not complied with the Act relating to poisons: if he acted as a chemist he must conform to the law. After some other evidence had been given, as to the state of mind of the deceased, the jury returned the following verdict:—"Suicide with essential oil of almonds while in an unsound state of mind."

Illegal Sale of Arsenic.—Charles Hazard Gare, the druggist who sold arsenic to the woman, Fanny Oliver, who has been sentenced to death, but the sentence since commuted to transportation for life, for poisoning her husband, was brought before the Dudley magistrates on Saturday, July 25, and fined £1 and costs.

At Church Stretton, Mr. Lester, grocer, was charged for selling a packet of sheep powder called "Cooper's Sheep-dipping Powder," containing 8 ounces of arsenic, without entering the sale in a book, and thus infringing the Act. The complainant, Mr. Phillips, a chemist, said an Act was passed in 1868 to prevent unqualified persons selling poisons; that the defendant was not a qualified person, and that the powder sold by him was shown by analysis to contain 24 parts each of sulphur and arsenic, and 4 parts of soda and other impurities. Mr. Cooper, a member of the Veterinary College, said that "Cooper's Sheep-dipping Powder" had been sold for upwards of twenty years, that no attempt had previously been made to stop its sale, and that the complainant, Mr. Phillips, had applied for the agency of the powder, but had been refused. The decision of the magistrates was reserved.

CASES OF POISONING—ACCIDENTAL AND CRIMINAL.

A Cause of Lead Poisoning.—Mr. F. Taylor, of Romsey, in a letter to the editor of the 'Medical Times and Gazette,' states that he has had several cases of lead poisoning arising from ginger beer, containing tartaric acid, being fermented in the "bushel pans" commonly used for kitchen purposes. The glazing of the pans is produced by dusting them, whilst the clay is damp, with litharge and barley-meal previously to their being "fired" in the kiln; Mr. Taylor observes that in all the cases he has met with, the glazing has been completely removed by the acid, and he wishes to warn people to use oaken tubs for all purposes for which these hurtful pans are now used.

Poisoning by Nitro-Glycerine.—A case is noticed in the 'Medical Record' in which a servant in a restaurant drank half a wine-glassful of nitro-glycerine in mistake for wine. There was severe pain, but the vomiting which ensued rendered an emetic unnecessary. Almond emulsion, with opium and other demulcents, were used with success. Intense headache and loss of appetite lasted for three days.

Suicide by "Mouse Poison."—An inquest has been held at Great Bridge respecting the death of Charlotte Hannah Davis, a child aged 11 years. It appeared from the evidence of the mother, that her daughter had been obtaining goods on a false pretext, and, upon her remonstrating with deceased, she threatened to poison herself, which threat she carried out by swallowing some "mouse powder." Medical assistance was obtained, but the efforts were unsuccessful. Thomas Austin, a chemist, said deceased came to his shop and asked for a packet of "mouse powder," which was supplied with a caution as to its use. The packet contained strychnia. A verdict was returned to the effect that deceased committed suicide by taking poison while in an unsound state of mind.

It would appear that these so-called "vermin killers" are in much demand for criminal purposes, possibly restriction on the sale of the scheduled poisons in the Pharmacy Act, having closed some of the avenues, recourse has been had to those which at present are not within the letter of the law. The public papers record another case in which a man at Sheffield has been sentenced to five years' penal servitude, for attempting to poison his mother and sister, by putting Battle's "Vermin Killer" into a saucepan in which food was being cooked; fortunately the appearance and taste of the food saved the intended victims.

Alleged Poisoning.—On Monday, August 9th, the boy Charles Gritt, who confessed to having poisoned Miss Emily Collier, of Newport, Monmouthshire, was brought before the borough magistrates on that charge. The boy does not deny the charge, but confesses that he gave the young lady some poisoned wheat, for the purpose of seeing what effect it would have on a human being. A remand was granted for the purpose of obtaining additional evidence.

Accidental Poisoning.—It is stated that a woman, in Lincolnshire, administered four drops of laudanum with sugar and water to her child, five weeks old, for the relief of pain and disorder of the stomach. The child died the next morning from the effects of the dose.

The death of a child is also reported to have occurred in Northumberland, from eating the water-hemlock.

Death from an Overdose of Medicine.—The death of a child from an overdose of medicine is recorded at Leeds. The mother, to alleviate the suffering of the child, administered a dose of "Washington's Cordial," which induced sleep from which the child did not recover.

Poisoning by Strychnine.—Mr. Beloe, the coroner for the borough of Lynn, held an adjourned inquest on Wednesday, May 5th, on the body of Charlotte Langford, the infant daughter of Mr. A. F. Langford, a chemist in the town, who had died under circumstances leading to the belief that she had been poisoned by strychnine. It appeared from the evidence that Mrs. Langford, the mother of the child, had, for the last six months, been in very low spirits. She imagined that her husband's business had fallen off, and that he was on the brink of poverty. At the time of her confinement she had complained of pain in the head, and was much excited. On the 26th ult. Dr. Lowe, the medical attendant of the family, was sent for to see Mr. Langford, who was said to be dying. He found him in bed, suffering from convulsions, and on asking his wife when they came on, she said she had poisoned herself and her husband with strychnine. At this moment she was herself thrown into a strong tetanic convulsion. Remedies were at once administered, and both Mr. Langford and his wife recovered. The deceased child was found in its cradle, strongly convulsed; the stomach-pump was at once used, but it did not recover. The contents of various parts of the body were sent to Dr. Letheby, who found strychnine in the stomach.

Dr. Letheby stated, in his evidence, that he discovered strychnia in the contents of the stomach; the quantity was sufficient to show its nature, and he was of opinion, from the account given of the symptoms, and of the *post mortem* examination, that the child died from strychnia. In cross-examination Dr. Letheby said, that he did not think, from the analysis alone, he should be justified in giving an opinion as to the cause of death, although the poison found in a stomach in every case of poisoning. is the excess of that which has killed,—the residuum of that which has been absorbed. Dr. Letheby was of opinion that strychnia could not be absorbed by an infant through the mother's milk. The contents of the packet found in the pocket of the dress of Mrs. Langford was proved to be strychnia.

Mrs. Langford, sen., who sent for the medical men on the 26th ult., stated that Mrs. Langford, jun. admitted that she had poisoned her husband and her child, and had herself taken poison. The jury returned the following verdict:—"Died of strychnine, given by the mother while in an unsound state of mind."

Mr. Langford has since died; and Mrs. Langford has been committed on the charge of wilful murder in both cases. No strychnia was discovered by Dr. Letheby in the viscera of Mr. Langford, but, according to the medical evidence, the symptoms were similar to those produced by strychnia.

The trial of the above case took place at Norwich, August 7th, before the Lord Chief Justice.

Mr. William Cooper and Mr. Abdy appeared for the prosecution; the prisoner was defended by Mr. O'Malley, Q.C., Mr. Metcalfe, and Mr. Ford.

The evidence of Drs. Lowe and Archer, by whom the *post mortem* examination of the child was made, was to the effect that before the death of the child there were twitchings of the muscles of the face and arms; that the fingers as well as the toes were rigidly bent, and the muscles of the abdomen were contracted, and that it was convulsed strongly five or six times in the day.

We subjoin the evidence given by Dr. Letheby and Dr. Taylor:—

Dr. Letheby.—I received from a police-constable a hamper. There were two jars and a wide-mouthed bottle, containing a brown paper packet, sealed. The packet contained rather more than five and a half grains of pure strychnia in a crystalline state. A dress was brought me at the same time. This is it. I cut the pocket out, examined it, and found about a third of a grain of strychnia. I took out of one jar the whole of the viscera of a child, the stomach, and its contents. I found on opening it a fluid ounce of a thick fluid, pap and milk. It was analysed, and I discovered very distinct traces of strychnia. I examined the liver, and from a portion of the liver I extracted something which I know to be strychnia, by its bitter taste and its action on frogs. I have heard the evidence given by Drs. Lowe and Archer, and I believe the child's death to have been caused by strychnia. I found quite enough in the stomach to found the oxidization test. I examined the brain and spinal cord, and found nothing there. I have heard Dr. Lowe's evidence with respect to the secretion of strychnia by the mother's milk. It is quite possible that may be so, but the mother must be under the influence of strychnia to have such an effect. The bitterness of the strychnia would affect the milk. The time of action of the strychnia depends on a great number of circumstances. It may be a few minutes, it may be two hours.

Cross-examined by Mr. O'Malley.—The portion discovered in the stomach is the portion unabsorbed. The absorption from the stomach into the circulation may or may not go on until death is produced. In the case of a child I should expect it would go on very quickly. After it had received a full killing dose, I should think half an hour more likely. Six hours would be the extreme limit. There was milk in the child's stomach. After evaporation and application of peroxide of manganese, I obtained the red and the violet colours which are the characteristics of strychnia. There is no other substance that would produce that colour by that test. My opinion is, that in cases of poisoning by strychnia we should find it in the stomach. My opinion still is, that we ought to find it in the stomach. I remember reading a report of a case in the 'Lancet,' by Dr. Harley, that the mother did communicate *nux vomica* through her milk to her child, by whom symptoms of poisoning by *nux vomica* were shown, and that after the discontinuance of the medicine, in which the *nux vomica* was contained, the symptoms ceased.

Dr. Taylor.—I have heard the evidence in this case to-day, and from what I have heard I believe the child died from the effects of strychnia. I can see no other cause for the convulsions. It is quite possible that most poisons may find their way through the milk into a child, but it is very improbable, as they pass away through the urine and the excretions. I have listened to the evidence about the time the child lingered, and I never knew a similar instance of an infant living so long after taking strychnia. I can only suppose that the dose was exceedingly small, but I can see no other cause of death. In this particular case, I think the poison was not conveyed through the mother's milk. If it had depended only on the milk, it would have been so rapidly absorbed that in the course of nine hours there would have been no trace.

Cross-examined by Mr. O'Malley —Pure strychnia is a very insoluble substance. It is absolutely necessary that it should be dissolved in the stomach. The liquids of the stomach exercise a solvent power on it very slowly.

In his speech for the prisoner, Mr. O'Malley contended that there was no proof that the prisoner had administered poison to her child wilfully or feloniously, and that no reliance could be placed on the statements made by her to Dr. Lowe or Dr. Archer, to the effect that she had poisoned herself and her husband, as she was not conscious all the time of what she was saying and doing, and was unable to reply properly to the questions put by the doctors.

The jury found the prisoner "Not Guilty."

Poisonous Effects of Cimicifuga.— A case is recorded in the 'Medical and Surgical Reporter' for June, in which one drachm of Squibb's fluid extract of *Actæa racemosa*,* was given to a lady as a parturifacient; in less than two hours the patient began to complain of great pain in the head, back, and limbs, with vertigo, to such an extent that she could not sit up; the pupils were enormously dilated, and the vision much distorted. During the first twelve hours after the toxic dose was exhibited, there was nausea and vomiting, with feeble pulse, and prostration. Brandy, coffee, and aromatic spirit of ammonia gave relief.

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* The formula for preparing the fluid extract will be found in this Journal, Vol. II. (N. S.), p. 467.

Poisoning by Arsenic.—At Leeds, August 11th, before Mr. Baron Cleasby, William Pickersgill was indicted for the wilful murder of Rebecca Horsfall. Mr. Wheelhouse and Mr. Forbes were for the prosecution; Mr. Maule, Q.C., and Mr. Hannay for the defence. The prisoner was a bricklayer, and the deceased was in the service of Mr. Foskett, a farmer.

On the 30th of May, about 7 o'clock, the prisoner was seen with the deceased sitting on a stile, and at that time he gave her something to drink from a bottle. After this she returned home, and on the following day, about 11 o'clock, she became ill, with all the symptoms of poisoning by arsenic. Evidence was given to the effect that arsenic was used in the farming operations, and that the prisoner, a few days previously, was in the immediate neighbourhood of some glass works where large quantities of arsenic were used, and that frequently exposed in a yard where any one could get at it. The medical evidence was to the effect that death was caused by arsenical poisoning: large quantities of arsenic were found in the stomach and other parts.* The declaration of the deceased, taken just before her death, was put in. It was to the effect that the prisoner gave her something to drink from a bottle, and that soon afterwards she became ill and sick.

Mr. Maule made a powerful appeal for the defence, commenting upon the absence of motive and the extraordinary fact of the length of time, from 7.30 to 11 on the following morning, between the administration of the poison and the severe illness arising. The jury returned a verdict of "Not Guilty."

Poisoning by Sulphuretted Hydrogen.—The death of two men by sulphuretted hydrogen in a sewer is reported from Dublin. Dr. Mapother deposed that the gas was emitted from the lime refuse of the gas works, which found its way into the sewer. Professors Sullivan and Cameron were of opinion that some acid from the chemical works must have been added for the evolution of enough sulphuretted hydrogen to produce fatal effects. The verdict condemned the Corporation for not attending to the recommendation of their medical officer, by abandoning the lime process.

By Arsenic.—At Wells, Charles Smith, aged twenty-three, was indicted for attempting to administer a quantity of arsenic to his wife with the intent of murder. The evidence given was to the effect that the attempt had been made more than once. On the last occasion the arsenic was put into a saucepan with some broth which was being prepared for dinner. On being accused by his wife, he took the opportunity during her absence to make away with the contents of the saucepan, but a portion of the grease having been scraped from the inside of the vessel, was submitted to analysis by Mr. W. W. Stoddart, of Bristol, who found it to contain white arsenic. The prisoner was sentenced to twenty years penal servitude.

Accidental Poisoning by Arsenic.—A frightful case of accidental poisoning has occurred at Waltham, near Canterbury. It appears that a labourer named Lancefield, who had been in the service of Mr. File, a farmer, was, with his wife, suddenly taken ill after taking tea. Mr. Hamilton, a local practitioner, was called in, who considered the symptoms to be those of English cholera, and treated them accordingly. The man died on Friday, August 20th. Meanwhile a dozen persons living near were attacked in a similar manner, and it was noticed that it was after drinking water from the same bucket used by the Lancefields. Mr. Hamilton prescribed the usual remedies for persons who had taken poison, and most of the patients recovered, but Mrs. Lancefield died on Monday, August 23rd. Unfortunately those who came to their assistance gave them water to quench their thirst from the fatal bucket. From the inquiry made, it appears that "Bigg's Sheep-dipping Composition" had been used on the farm, and that the barrel which had contained it was given to Lancefield to use as a hog-tub, but with the caution that it must be properly cleansed. This appears to have been done with a solution of soda, but it is supposed that the wood had absorbed some of the poison which had impregnated the water after standing in it twelve or fourteen hours,—the tub having been used as a well bucket. An inquest was held on Tuesday, August 24th. A

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* It was stated that up to 1866, the longest period known between the administration of arsenic and the commencement of the symptoms of poisoning was ten hours, but that a case had since been reported from America in which sixteen hours had elapsed between the taking of arsenic and the commencement of the symptoms.

post-mortem examination showed that "death had resulted from arsenic taken in a diluted form, or what is called 'corrosive sublimate'" (*sic!*), and the jury returned a verdict of "Accidentally Poisoned."

CHARGE AGAINST A DRUGGIST FOR DISPENSING HYDROCYANIC ACID.

A curious and interesting case has recently occurred at Worthing, in connection with which a summons was issued against a druggist "for having unlawfully sold prussic acid to a stranger, in a bottle not labelled poison."

It appears that a young man named Ansel Johnson, who was assistant to Mr. Crotch, chemist, of Edgware Road, London, having been left in charge of the business while his employer was absent in the country, went away, taking all the money he could get, at the same time sending a telegram to Mr. Crotch to return immediately. He was next heard of at Worthing, where he obtained some hydrocyanic acid, with which he was accused of attempting to commit suicide. This hydrocyanic acid was supplied to him by a druggist at Worthing, and hence two charges were laid before the magistrates,—one against the young man for attempting to commit suicide, which, however, was not perpetrated, for the poison was not taken, and the other against the druggist at Worthing for selling the poison, as was supposed, in violation of the provisions of the "Pharmacy Act."

The evidence adduced before the magistrates went to show that the young man Johnson took a prescription to the druggist, Mr. Berry, ordering 3 drachms of Scheele's hydrocyanic acid mixed with two ounces of rose water, for a lotion. The prescription was written in the usual way, purporting to be for Mrs. Newton, and had the initials of a London physician. The medicine was dispensed as ordered. It was put into an angular bottle to which the name of the druggist was attached, together with a label indicating that it was for external use, and the prescription was copied into a book kept for that purpose.

On behalf of Mr. Berry, it was contended that in thus dispensing the medicine he had fulfilled all that the Act required, and in support of this representation reference was made to an article in the 'Pharmaceutical Journal,' in which the requirements of the law in such cases were explained, also to a letter which had been received from the late President of the Pharmaceutical Society to the same effect.

On the other side it was stated that the prescription, although purporting to have been written by a physician, was really in that respect a forgery, as it was written by the young man Johnson, who intended to use the medicine for an unlawful purpose.

After hearing the evidence, the magistrates retired to consider the case, and in about half an hour the Chairman, on their return to the Court, said the Bench had decided to take time to consider the case. Notice would be given to all parties when their decision would be given.

On Wednesday, the 25th of August, the magistrates gave their decision, in which they imposed a fine of ten shillings on Mr. Berry for each of the two offences with which he was charged.

LIABILITY OF CARRIERS.

Warren v. *The Great Western Railway Company.*

A case of some interest to chemists has been tried at Bristol before Mr. Justice Lush. The plaintiffs were Messrs. A. and J. Warren, wholesale druggists of that city, and the action was brought to recover compensation from the railway company for not properly carrying a certain carboy of essence of lemon. It was proved that the carboy was securely packed with straw in a box when delivered to the company. On its arrival the neck of the carboy was found to be depressed, as from a violent blow, and the essence, 120 lbs., with the exception of about 7 lbs. or 8 lbs., had been lost. The defence was, that the carboy was improperly packed, but this was not sustained; and ultimately the jury found for the plaintiffs, damages £44.

ROBBERY OF DRUGS.

At the Mansion House, July 31, Thomas Worcester, a carman, was charged with stealing a quantity of sarsaparilla, tartaric acid, rhubarb, and other drugs from his employers, Messrs. Langton and Co., wholesale druggists. He was suspected of robbing them, and, having been watched, was followed to his home, where the drugs were found. He was committed for trial.

AN ACT TO AMEND "THE PHARMACY ACT, 1868."

32 & 33 Vict. c. 117.

Whereas it is expedient to amend the provisions of the Pharmacy Act, 1868, in regard to duly qualified medical practitioners and veterinary surgeons, and in other respects:

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

1. Nothing contained in the first fifteen sections of the recited Act shall affect any person who has been registered as a legally qualified medical practitioner before the passing of this Act; and the said clauses shall not apply to any person who may hereafter be registered as a legally qualified practitioner, and who, in order to obtain his diploma for such registration, shall have passed an examination in pharmacy; nor shall the said clauses prevent any person who is a member of the Royal College of Veterinary Surgeons of Great Britain, or holds a certificate in veterinary surgery from the Highland and Agricultural Society of Scotland, from dispensing medicines for animals under his care.

2. The time within which certificates may be produced to the registrar under section four of the said Act, by persons employed as assistants before the passing of the said Act, shall be extended to the thirty-first day of December one thousand eight hundred and sixty-nine, and the certificates given under the same section according to Schedule (A.) of this Act shall be sufficient.

3. Nothing contained in section seventeen of the said recited Act shall apply to any medicine supplied by a legally qualified medical practitioner to his patient, or dispensed by any person registered under the said Act, provided such medicine be distinctly labelled with the name and address of the seller, and the ingredients thereof be entered, with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose.

4. Section 23, and Schedule (E.) of the said recited Act are hereby repealed.

5. Schedule (F.) of the said recited Act is hereby altered by substituting for the second column headed "Name of Purchaser" a column headed "Name and Address of Purchaser."

Schedule (A.).

Declaration to be signed by and on behalf of any Assistant claiming to be registered under the Pharmacy Act, 1868.

To the Registrar of the Pharmaceutical Society of Great Britain.

I hereby declare that the undersigned residing at in the county of had for three years before the thirty-first day of July one thousand eight hundred and sixty-eight been employed in dispensing and compounding prescriptions as an assistant to a Pharmaceutical Chemist or Chemist and Druggist, and attained the age of twenty-one years.

As witness my hand this day of 186 .

A.B. Qualified medical practitioner.
C.D. Pharmaceutical Chemist.
E.F. Chemist and Druggist.
G.H. Magistrate.

To be signed by one of the four parties named.

I hereby declare that I was an Assistant to   of
in the county of   in the year   , and was for three years before the thirty-first day of July one thousand eight hundred and sixty-eight actually engaged in dispensing and compounding prescriptions, and that I had attained the full age of twenty-one years at the above-named date.

N.O. Assistant.

ANNUAL INTERNATIONAL EXHIBITIONS OF SELECTED WORKS.

Her Majesty's Commissioners for the Exhibition of 1851, announce that the first of a series of annual international exhibitions of selected works of fine and industrial art will be opened in London, at South Kensington, on Monday, the 1st May, 1871, and be closed on Saturday, the 30th September, 1871.

The exhibitions will take place in permanent buildings, about to be erected adjoining the arcades of the Royal Horticultural Gardens.

The productions of all nations will be admitted, subject to obtaining the certificate of competent judges that they are of sufficient excellence to be worthy of exhibition.

The objects in the first exhibition will consist of the following classes, for each of which will be appointed a reporter and a separate committee:—

I. *Fine Arts.*—1. Painting of all kinds, in oil, water-colours, enamel, porcelain, etc. 2. Sculpture in marble, wood, stone, terra-cotta, metal, ivory, and other materials. 3. Engravings, lithography, photography, etc. 4. Architectural designs and models. 5. Tapestries, embroideries, lace, etc., shown for their fine art and not as manufactures. 6. Designs for all kinds of decorative manufactures. 7. Copies of ancient pictures, enamels, reproductions in plaster, electrotypes of fine ancient works of art, etc.

II. *Scientific Inventions and New Discoveries of all Kinds.*

III. *Manufactures.*—(*a.*) Pottery of all kinds, including that used in building, viz. earthenware, stoneware, porcelain, parian, etc., with machinery and processes for the preparation of such manufactures. (*b.*) Wool and worsted fabrics, with the raw produce and machinery for manufactures in the same. (*c.*) Educational—1. School buildings, fittings, furniture, etc.; 2. Books, maps, globes, etc.; 3. Appliances for physical training, including toys and games; 4. Specimens and illustrations of modes of teaching fine art, natural history, and physical science.

IV. *Horticulture.*—International exhibitions of new and rare plants, and of fruits, vegetables, flowers, and plants, showing specialities of cultivation, will be held by the Royal Horticultural Society, in conjunction with the above exhibitions.

In Classes II. and III. producers will be permitted to send one specimen of every kind of object they manufacture, such object being distinguished for novelty or excellence. Detailed rules applicable for each of the above classes, and lists of the separate trades engaged in the production of objects of manufacture, will be issued. Special rules for horticultural exhibitions will be issued by the Royal Horticultural Society.

The arrangement of the objects will be according to classes and not nationalities, as in former International Exhibitions.

One-third portion of the whole available space will be assigned absolutely to foreign exhibitors, who must obtain certificates for the admission of their objects from their respective governments. Foreign countries will appoint their own judges. The remaining two-thirds of the space will be filled by objects produced either in the United Kingdom, or, if produced abroad, sent direct to the building for inspection and approval of judges selected for the British exhibitors. Objects not accepted for exhibition must be removed according the notices given, but no objects exhibited can be removed until the close of the exhibition.

All exhibitors or their agents must deliver, at the building, into the charge of the proper officers, the objects unpacked and ready for immediate exhibition, and free of all charges for carriage, etc.

Her Majesty's Commissioners will find large glass cases, stands, and fittings, free of cost to the exhibitors, and, except in the case of machinery, carry out the arrangement of the objects by their own officers.

Her Majesty's Commissioners will take the greatest possible care of all objects, but they will not hold themselves responsible for loss or damage of any kind.

Prices may be attached to the objects, and exhibitors will be encouraged to state their prices. Agents will be appointed to attend to the interests of exhibitors.

Every object must be accompanied with a descriptive label, stating the special reason, whether of excellence, novelty, or cheapness, etc., why it is offered for exhibition.

Due notice will be given of the days for receiving each class of objects; and, to enable the arrangements to be carried into effect, strict punctuality will be required from all exhibitors, both foreign and British. Objects delivered after the days appointed for their reception cannot be received.

Reports of each class of objects will be prepared immediately after the opening, and will be published before the 1st June, 1871.

Each foreign country will be free to accredit an official reporter for every class in which objects made in such country are exhibited, for the purpose of joining in the reports.

There will be no prizes, but a certificate of having obtained the distinction of admission to the exhibition will be given to each exhibitor.

A catalogue will be published in the English language, but every foreign country will be free to publish a catalogue in its own language, if it think fit.—*Journal of Society of Arts.*

PROPOSED REMEDIES FOR "THE MURRAIN" (FOOT AND MOUTH DISEASE).

The reappearance of this disease among cattle has called forth several communications on the subject.

Mr. T. C. Scott, in the 'Times' of August 19th, recommends the following as an "infallible cure:"—"Dissolve one pound of blue-stone (sulphate of copperas) in a gallon of soft water, and wash the animals' mouths with this from a sponge attached to a stick; then put two or three large tablespoonfuls of oatmeal and powdered alum, mixed in equal proportions, into their mouths, as near the root of the tongue as possible, and the discharge of an immense quantity of saliva will be the result. Wash their feet, especially between the claws, with the same solution, and allow them to stand on dry straw. Three applications daily will cure the worst cases." Mr. Scott means, of course, sulphate of copper, not *copperas;* but, as the writer corrects his error by giving the common name "blue-stone," no mistake is likely to arise.

Sir J. T. Tyrell, in the same paper of August 24, proposes, on the authority of Professor Simmonds, *sulphite of soda* as a simple and efficacious remedy. One ounce of this salt is dissolved in three gallons of water, and the animals are allowed to drink of the solution *ad libitum.*

"An Old Colonist," in reference to this subject, thinks that thirty grains of sulphate of copper to a pint of water, would be sufficiently strong as an outward wash.

QUEKETT MICROSCOPICAL CLUB.

The Fourth Annual General Meeting was held on Friday evening last in the Library of University College; Arthur E. Durham, President, Esq., in the chair.

A report was read which showed that 142 members had been elected since the last annual meeting, making a total of 512.

The Treasurer's report showed that the finances of the Club were in a very satisfactory condition.

In vacating the chair, which he had ably filled for two years, the President delivered a highly impressive address, which was listened to with marked attention throughout.

The following gentlemen were elected to fill the offices named for the ensuing year:—

President—Mr. P. Le Neve Foster.

Vice-Presidents—Dr. R. Braithwaite, Mr. W. M. Bywater, Mr. A. E. Durham, Mr. H. F. Hailes.

Members of Committee—Mr. T. Crooke, Mr. B. T. Lowne, Mr. S. J. M'Intire, Dr. J. Matthews.

Treasurer—Mr. R. Hardwicke.

Hon. Secretary—Mr. T. Charters White.

Hon. Sec. for Foreign Correspondence—Mr. M. C. Cooke.

A paper on the ratio-micro-polariscope by Mr. James J. Field, its inventor, was read, after which the instrument was exhibited. Ten new members were elected, and the proceedings terminated.

MISCELLANEA.

Explosive Agents.—On Monday night, August 2, a lad in the shop of Mr. Driver, of Twickenham, was in the act of filling a tank with turpentine from a cask in the shop, when an explosion was caused by a lighted candle the boy was then using. He was blown into the street, and much burnt. The whole of the stock was destroyed, and the adjoining premises much injured.

From Brazil we learn that a quantity of nitro-glycerine had been procured for the military arsenal, but from its dangerous character it was decided to destroy it; six cases, containing about sixty pounds, were accordingly taken in a launch to be sunk in the bay. In the act of doing this an explosion occurred, which blew the boat and its crew of seven men to pieces.

On Tuesday, August 10th, Mr. Payne held an inquest respecting the death of John Greanes, who had been employed as an errand boy at Messrs. Burgoyne and Co., wholesale druggists, Coleman Street. While sitting on a truck in the street a piece of wood struck against his pocket, which caused an explosion; his clothes were set on fire, and he was so badly burnt that he died a few days afterwards. The lad had been in the habit of playing with "red fire," and at the time of the explosion he had an ounce of this substance in his pocket. The jury returned a verdict of "Accidental Death."

An explosion took place at the George Hotel, Bognor, on Monday, August 9th. The flooring of an upper room was found burning, and sulphurous vapour filled that part of the house. On the following day, Mr. George John Blake was charged before the magistrates with having, in an unlicensed place, an explosive substance. Mr. Blake admitted the charge, but suggested that it was not an explosive, inasmuch as it would only explode by the introduction of a strong detonating tube: he also explained that the substance was a patented invention for blasting purposes, but he was at a loss to account for its ignition. He was fined £1 and costs.

The inventor of the agent referred to has explained that there was no explosion, save the bursting open of the tin canister in which the compound was contained,—the compound simply burning. He states that the cause of the ignition is not certain, but if it was spontaneous combustion, this would have been caused by the acidity of the sulphur, the remaining portion of that employed in the manufacture of the compound having been found to be strongly acid, which acidity should have been previously neutralized by an alkali.

BOOKS RECEIVED.

SELECTA E PRÆSCRIPTIS: Selections from Physicians' Prescriptions, etc., to which is added a Key, containing the Prescriptions in an unabbreviated form, with a Literal Translation for the use of Medical and Pharmaceutical Students. By JONATHAN PEREIRA, M.D., F.R.S. Fifteenth edition. London: John Churchill and Sons, New Burlington Street. 1869.

This little work which has been so often recommended in this Journal, as a useful pocket companion for the Pharmaceutical student, has reached another edition. This, the fifteenth edition, appears to have received careful revision, and a few alterations, rendered necessary by the publication of the British Pharmacopœia, have been made. The formulæ contained in the second and third parts will be found useful to the medical student, as well as to the student in Pharmacy, to whom the work is more particularly addressed.

THE MEDICAL AND SURGICAL REPORTER, 15 numbers, from February to July. Philadelphia and New York. London agents: Stevens Brothers, Henrietta Street, Covent Garden.

CORRESPONDENCE.

Dear Sir,—With reference to the report published in your July number of a case of poisoning by strychnia at St. David's, and which is further noticed in a communication from Mr. Chipperfield in the present monthly Journal, we feel that it is imperative upon us to state that we are *not* "the wholesale house in Bristol" who supplied strychnia in mistake for morphia.

We may name that we invariably send out strychnine for dispensing purposes in crystals.

We are, dear Sir,
Yours truly,
FERRIS AND COMPANY.
Union Street, Bristol.
August 3, 1869.

Dear Sir,—With reference to the case of poisoning by the substitution of strychnia for morphia, some particulars of which were given in your number for July, and again alluded to this month, we shall feel obliged by your mentioning as to the "wholesale druggist in Bristol," and "wholesale house" reported to have been named at the coroner's inquest, our firm is not in any way whatever connected with the painful occurrence.

Yours truly,
A. AND J. WARREN.
Redcliff Street, Bristol.

LIQ. CHLOROFORMI CO.

Sir,—Hoping that before long a known compound will take the place of an unknown one, may I venture to ask in your columns whether the forms given by some for chlorodyne do not err in using Indian hemp? In all specimens I have seen, made, or used, that from Mr. Squire's formula for Liq. Chlorof. Co. is certainly more like Chlorodyne than any that contains hemp, and is besides far more miscible.

If I may suggest a far more likely ingredient than hemp, I would recommend belladonna, to those who have opportunities of comparing the results of different so-called chlorodynes.

I fully agree with Dr. Collis Browne, when he claims originality in the remedy and the name for the remedy; and think his ought to be used in all cases, unless another maker's is ordered; and also think it no little disgrace to the trade, that the market is so full of imitations of other men's successes under the same names.

Mr. Squire has conferred great benefit by the publication of his formula and the name he has chosen is free from all objection; and it is possible that if Ext. Belladonnæ was added (perhaps one grain in 80 minims), and the morphia omitted, it would be more like the secret remedy so jealously and zealously defended. I am, Sir, yours very truly,

PHARMACIST.
Liverpool, August 3, 1869.

D. C. should apply to a tutor or schoolmaster for information as to the course he should pursue for acquiring "*a thorough knowledge of Latin.*" We believe the book named will be published shortly.

J. J. (Kilburn) says he has heard of many grocers who sell Epsom salts, senna, seidlitz powders, etc., and he thinks there ought to be some means of preventing this *interfering with the privileges of a class.* Does he think that druggists ought, at the same time, to be prevented from interfering with grocers, oilmen, perfumers, tobacconists, etc.?

A Country A. P. S. inquires, "Am I justified in using Duncan's Chloric Ether when Æther Chlor. is ordered in a prescription, or should the preparation consisting of 1 part of chloroform and 7 parts of rectified spirit be used? A reply from one of the large dispensing establishments would oblige."

C. D. says, will you state whether it be fair and right to sell a preparation with a printed label bearing the name of a physician who is still alive, such as "Erasmus Wilson's Hair Wash"?

H. G. R. (Bradford) inquires whether the "heavy" or "light" variety should be used when Magnes. Carb. is ordered in prescriptions. The Pharmacopœia says the heavy.

M. P. S., from an experience of 35 years, recommends the following means for preventing accidents in dispensing:—"Instead of the usual label upon laudanum, oxalic acid, sugar of lead, morphia, arsenic, corrosive sublimate, etc., they are labelled POISON in large Egyptian letters, with the proper Latin name in small letters underneath. The laudanum bottle is kept with the distilled waters and light-coloured articles at a distance from the dark tinctures, to prevent it being sold for Tinct. Rhei Co. The more dangerous articles are kept on a higher shelf requiring the use of a short step or two to reach them, with the exception of strychnine, veratrine, aconitine, and atropia, which are kept under lock and key."

"*Pharmacist*" will find an article on the Preliminary Examination in our current number; also notice of certain alterations, as to the mode of conducting it, in the Transactions of the Council at their last meeting. He is in error in his statement concerning the resolution passed at the July meeting; it was then resolved that Pharmaceutical Chemists, as well as Graduates of a University and Members of the College of Preceptors, might be appointed by the Council to conduct this examination.

"*Inquirer.*"—In the action of nitric acid on brucine, a nitro-compound (cacotheline) is produced, which is partly the cause of the colour that occurs.

A. Z. (Cheltenham).—(1.) The characters you describe must result from defective preparation of the liquor, the iron being imperfectly acted upon by the nitric acid. (2.) Neutralize the quantity of acid named, and dilute to the required extent with water. We presume, however, that it is not intended to contain 20 per cent. of acid.

"*Agricola.*"—(1.) The ground bones may be mixed with about two-thirds their weight of oil of vitriol in its first partially concentrated state, sp. gr. 1·72, mixed with two volumes of water. The action may be promoted by the application of heat. (2.) About £32.

"*Pharmacopœia.*"—The oxide of lead used in making the subacetate often contains a little copper, which gives colour to the solution. This may be removed by heating the solution in contact with a piece of clean metallic lead.

"*A Student.*"—The terms are intended to refer to the metal in the two states of combination in which it exists in mercurous and mercuric salts. The terms univalent and bivalent are more generally used.

"*Pharmaceutical Ignoramus.*"—A grain-measure is the volume of a grain (by weight) of distilled water. Thus, 100 grain-measures of sulphuric acid is a quantity by measure equal to 100 grains by weight of distilled water.

F. G. (Dunbar) recommends, in making tinctures by percolation, that the displacement should be effected with methylated spirit. He says he can operate in this way without allowing any of the methylated spirit to pass into the displaced product. We should fear, however, that in unskilled hands the process would prove less satisfactory.

"*An Assistant.*"—Dupré's Electric Lamp may be obtained of Messrs. Browning and Co., 111, Minories.

N. O. P.—No; the Major Examination is necessary.

H. H. P. (Ryde).—We are unable to give the information.

R. B. B. (Liverpool).—Apply by letter to the Secretary, 17, Bloomsbury Square.

W. B. (Upper Norwood).—(1.) Yes; but having passed the Minor Examination, may be registered as a chemist and druggist. (2.) No. (3.) We know of no means of preventing it.

"*Chemicus*" (Bury) should apply by letter to the Registrar.

"*Æolus*" (Louth).—A knowledge of both is expected.

C. B.—We know of no formula for *Syrup of Hypophosphate of Quinine and Strychnia.*

Messrs. Curtis and Co. (Baker Street) wish to be advertised of the *secret* formula for "*Ung. Odorata.*" We presume that *Adeps Odorata* is intended, respecting which there is no secret, as will be seen on reference to the 'Pharmaceutical Journal,' Vol. VIII. p. 246.

D. Udall (Congleton).—*Dynamite.* See Vol. X. (N. S.) p. 367.

A. P. S. (E.)—(1.) *Parchment Paper.* See Vol. XVI. p. 612. (2.) Herbarium Prize. See Regulations, Vol. X. (N. S.) p. 571.

W. M. N. calls our attention to a statement made by Dr. Alfred Taylor in his evidence at a recent trial of a prisoner for poisoning with white precipitate, to the effect that he had endeavoured to get that article included in the schedule of poisons to the Pharmacy Act, 1868, and that as it was omitted it was sold without being marked "poison." Our correspondent observes that to place the sale of white precipitate under the regulations required by the Act would encourage uncleanliness among the class of persons who principally use it. At the same time he states that he never sells it, and that it should never be sold, without a poison label.

"*A Country Assistant*" has sent us a long communication on the subject of "*Qualification* v. *Remuneration,*" to which "Palmam" referred in our last. We think the hardship of which he complains can only be remedied gradually, as the interests of pharmacy and the position of pharmacists are advanced by means which are now provided and are in active operation.

"*Alkali*" wishes to know which is the best of the American Drug Trade Journals.

"*A Correspondent.*"—*The New Notation.* See the Articles on this subject by Mr. Tilden in this Journal. Vol. IX. (N.S.) pp. 525, 579; Vol. X. (N.S.) p. 7.

Communications for this Journal, and books for review, should be addressed to the EDITOR, 17, Bloomsbury Square. Those received after the 20th of the month cannot be noticed in the ensuing number.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to ELIAS BREMRIDGE, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. CHURCHILL, New Burlington Street, London, W.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. IV.—OCTOBER, 1869.

PHARMACEUTICAL CONFERENCES.

The last two months have been signalized by the occurrence of Pharmaceutical Conferences—the national and the international—accounts of which occupy a considerable portion of this and the preceding number of our Journal. Last month we had occasion to congratulate our brethren in this country on the results of their meeting at Exeter, and now we may equally congratulate our brethren abroad upon the very successful issue of the international gathering of pharmaceutists at Vienna. The Council of our Society having responded to the invitation that was sent to them in common with other pharmaceutical corporations, by appointing two delegates to represent them at the Congress, it has become our duty to describe somewhat in detail the proceedings at this the first International Congress at which the pharmaceutists of Great Britain have taken part. Although the questions that were principally discussed at the meetings are of more practical importance and interest to the pharmaceutical bodies abroad than in this country, there are points nevertheless in the discussions which will no doubt interest many of our members. It is highly satisfactory to find that the pharmaceutists of this country occupy a position such as the most favoured of our Continental brethren have yet, in some respects, failed to possess, and which they are now zealously trying to obtain. The chief source of complaint among pharmaceutists in Germany and Austria arises from the want of independence of a control which is exercised over them by the medical corporations. Educated side by side with the physician, and equally qualified in his particular department for the exercise of his professional duties, the pharmaceutist is nevertheless subject to an amount of medical control which he feels to be unnecessary, and sometimes unjust. How gladly, in this respect, would the German apothecary change places with the English pharmacist! But, whilst seeking to be freed from medical interference and allowed to manage his own affairs, he is anxious, at the same time, to retain a privilege, if indeed it be such, which has probably been granted as a set-off to the surrender of a portion of his professional independence.

In Germany and Austria the apothecary or pharmaceutist enjoys a monopoly which appears to be peculiar to his profession. The number of pharmacies is limited according to the number and nature of the population, and competition is thus greatly restricted. In no other profession or business, we believe, is this restriction granted, and it may even be doubted whether it is really a benefit to those who possess it. It adds greatly to the value of established businesses, and those in possession are naturally anxious to maintain this value; but the original purchase of the concern may have entailed an expenditure to which the profits of the business are barely adequate. The number of pharmacies in relation to the population appears at first sight to be small, and it might be thought that the business done at each establishment must be very extensive. Thus in Vienna, with a population of more than 600,000, there are only fifty pharmacies, or one to every 12,000 of the population. But it must be borne in mind that these pharmacies are strictly dispensing establishments, and that there are besides an unlimited number of establishments where drugs are sold, generally in connection with spices and grocery. Moreover, the apothecary, or pharmaceutist, hardly deals at all in extraneous articles, and to only a limited extent supplies patent or proprietary medicines. Among the fifty pharmaceutists of Vienna there are none who have very extensive businesses, four appearing to be the maximum number of assistants kept, and probably two the average. The recognized function of the apothecary, or pharmaceutist, is to dispense the medicines prescribed by the physician. In doing this he is required to observe certain regulations which are imposed by the law, and enforced under medical supervision. But, on the other hand, he is protected from undue competition, which enables him to confine himself to the legitimate objects of his profession. He takes the position of a professional man, and to this position his education and qualifications fully entitle him. In this respect he has probably progressed with the times, and hence the impatience with which he now submits to the control he so bitterly complains of.

After a long struggle, the pharmaceutists of Great Britain have succeeded in establishing their claim to recognition as a separate branch of the medical profession, and of securing to themselves an independent position, in which they are entrusted with the management of their own affairs, and the carrying out of the laws relating to the practice of pharmacy; and if by any means they can assist their brethren abroad in gaining the same rights and privileges, we feel assured they will most heartily do so.

PROSECUTIONS UNDER THE PHARMACY ACT, 1868.

Several persons have already been fined for infringements of the law relating to the sale of poisons; some for selling without having secured for themselves by registration the proper authority for doing so, others for selling without observing the prescribed regulations set forth in section 17.

In one case William Crussell, a grocer, was fined respectively under three distinct charges, in sums which, together with the costs, amounted in the aggregate to upwards of ten pounds. As far as the report goes, the proceedings in this case were instituted by the police, and Crussell had previously appeared before the magistrates on a similar charge. There was no attempt at defence, save the extraordinary assertion that the articles sold were not what they professed to be, but only "*substitutes.*" "Dummies, my dear boy! all dummies, except the leeches!" seems to be the rule of the village drug-sellers, and perhaps this substitution may be an element of safety.

For a sale of oxalic acid at Gloucester by James Dancey a conviction was obtained, and the fine imposed not being paid, the defendant appears to have been sent to prison for a month's hard labour. In this case the proceedings were taken under section 17, but Dancey's name not appearing on the register rendered the sale itself illegal.

We shall doubtless hear more of the Worthing conviction when the courts open, as Mr. Berry has taken the necessary steps to appeal from the decision of the magistrates to the Court of Queen's Bench. We look anxiously for the result, feeling that the points involved are of the utmost importance to every dispensing chemist in the kingdom; but, while we look anxiously, we are confident Mr. Berry has not infringed the provisions of the Act; and however ambiguous the language of 1868 may have been, the 3rd section of the Amendment Act, which was in operation before the charge was laid in this case, completely protects him.

Another prosecution reported in our Journal of last month, in which further consideration was deferred by the magistrates, has since been decided in favour of the defendant. We mean a charge against a grocer at Church Stretton for selling "Cooper's Sheep-dipping Powder." Proceedings were taken in this case under the Arsenic Act, and necessarily failed from the inapplicability of the term "Arsenic," as defined in that Act, to the compound in question; but out of it, according to report, will arise a prosecution under the Pharmacy Act, which, although it does not interfere with or curtail the provisions of the Arsenic Act, makes the sale of any "*preparation*" of arsenic by an unregistered person an offence. The summonses were taken out by Mr. James Phillips, a chemist of the same town, who, according to his own statement, feels aggrieved that the trade of the legitimate chemist should be interfered with by "*the petty grocer, the village sundryman, the herbalist, and others who are dealing, not only in poisons, but in every class of drugs they can obtain sales for.*"

That the Pharmacy Act of 1868 will abolish this dealing in poisons by unqualified persons, and that it was intended to do so, there can be no doubt; that the restriction of the trade to competent persons will be a benefit to those persons is equally clear, but to suppose that the Act was passed for the benefit of a class is simply absurd, and prosecutions like that at Church Stretton, accompanied by such a publication of the motives for instituting them, can only tend to bring the Act into disrepute. The primary object of legislation is the *public* good, and if in promoting it some private interests are advanced, let the persons benefited thereby accept their advancement as a secondary effect and be thankful.

We rejoice to see that our contemporary, the 'Chemist and Druggist,' deprecates the "*guerilla warfare*" of these "*amateur lawsuits*," and recommends reference rather to the Pharmaceutical Society as the legitimate prosecutor of offenders under the Act. There can be no doubt that it will be the duty of the Council to take action in such cases, and it is only reasonable to expect, that as soon as the regulations which have been lying in the Privy Council Office for the last four months are agreed on and fairly promulgated, that duty will be commenced, and in its exercise we hope the safety of the public will be advanced, without sacrifice of the dignity of the trade.

THE STANDARDS COMMISSION ON THE METRIC SYSTEM OF WEIGHTS AND MEASURES.

The second report, just issued, of the Standards Commission will be found in another part of this Journal. It is devoted entirely to questions relating to the metric system, which are treated in a very temperate and practical manner, the difficulties that would attend any attempt to effect a sudden change of systems in this country being clearly pointed out, as well as the advantages which in some respects would result from such a change if completely effected. It refutes the sweeping and groundless accusations which have sometimes been urged against the existing national system as established by law in this country, representing it as a system which meets the popular wants, and will not easily be expelled from popular use. At the same time, it admits the demand among a numerous class of the community for the introduction of the metric system, and the advantage that would result from such introduction in international communications. It suggests the adoption of certain arrangements for facilitating the introduction of the metric system and its use by those who desire it, but states that its general introduction "should be permissive only, and not made compulsory by law after any period to be now specified."

TRANSACTIONS

OF

THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *September* 1*st*, 1869,

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

Present—Messrs. Carteighe, Dymond, Edwards, Hills, Mackay, Morson, Orridge, Sandford, and Stoddart.

The minutes of the previous meeting were read and confirmed.

The report of the Finance and House Committee was presented, showing on the General Fund account a balance in the Treasurer's hands of £1387. 0*s*. 9*d*., and submitting for payment accounts, and various items amounting to £709. 19*s*. 8*d*., and on the Benevolent Fund account a balance of £414. 16*s*. 10*d*.

Resolved,—That the report be received and adopted, and payments made.

In consideration of the heavy expenses incurred annually in publishing the Register of Chemists and Druggists, a question arose as to the expediency of purchasing type for the same, which might remain in form, and it was moved by Mr. Mackay, seconded by Mr. Morson, and

Resolved—That the subject be remitted to the Finance Committee.

The reports and proceedings of the Library, Museum, and Laboratory Committee, and the Parliamentary Committee were received and adopted.

On the report and recommendation of the Board of Examiners, the Pereira Medal was awarded to George Conder.

It was moved by Mr. Mackay, seconded by Mr Edwards, and

Resolved,—That an additional Dispensing Counter be provided for the use of the Examiners.

In reference to the arrangements for the First or Preliminary Examination,

It was moved by Mr. Mackay, seconded by Mr. Dymond, and

Resolved,—That the Local Secretaries be and are hereby appointed to superintend the writing of the answers to the questions sent by the Board of Examiners for the First or Preliminary Examinations in the country.

A letter was read from the Secretary of the Pharmaceutical Society of Austria inviting the Pharmaceutical Society of Great Britain to send two or three delegates to the International Congress to be held in Vienna on the 9th, 10th, and 11th of September. The question having been considered,

It was moved by Mr. Hills, seconded by Mr. Carteighe, and

Resolved,—That the President and Professor Redwood be requested to attend the Congress as delegates from the Society, and that a sum of Thirty Pounds (£30) be voted to each to defray his expenses.

NOTICES OF MOTION (FOR OCTOBER).

Mr. Abraham—"That steps be taken to assimilate the laws which regulate the practice of pharmacy in Ireland and Great Britain respectively."

Mr. Dymond—"That as the universally expressed feeling of the anniversary meeting was in favour of the publicity of the proceedings of the Council of the Society, it is expedient that its proceedings be fully reported in the 'Pharmaceutical Journal,' and that reporters desiring to represent other Journals be permitted to be present, but that any portion of the proceedings which the Council shall declare to be unsuited for publication shall not be reported."

Mr. Orridge—"That in the opinion of this Council it is due to the constituent body that after the completion of the present series of the 'Pharmaceutical Journal,' the ensuing issue should be made fortnightly."

The following Pharmaceutical Chemists were elected—

MEMBERS.

Ford, Edward Beeks, Pontypool.
Harwood, Henry Thomas, Bristol.
Jones, Frederick William, London.
Sims, Charles Redman Hindostan, Hornsey, Middlesex.
Whysall, William, Grantham.

The following Chemists and Druggists, registered under the "Pharmacy Act, 1868," were elected—

MEMBERS.

TOWN.	CHRISTIAN & SURNAME.
Amlwch	Edwards, David.
Birmingham	Beynon, P. Ebenezer.
„	M'Isaac, George.
Bonar Bridge	Polson, J. Alexander.
Bristol	Lacey, Walter.
Bury St. Edmunds	Floyd, James.
Carlisle	Todd, Joe.
Devonport	Breeze, George.
Droitwich	Taylor, Edmund.
Edinburgh	Bairnsfather, James.
Malvern Wells	Wakefield, Cecil H.
Wellington	Portbury, Geo. Henry.
Worcester	Virgo, Charles.

LONDON.

Richards, William Ralph, 152, Camberwell Road, S.

The following were elected—

ASSOCIATES.

Andrews, John Knowles, High Wycombe.
Crewdson, Matthew, Ulverstone.
Goodwin, Medmer, Torquay.
Hemingway, Walter, London.
Moore, John, Blackpool.
Saunders, Charles, London.
Taylor, Thomas Charles, Brighton.
Wheeler, Frederick William, Bedford.

ERRATA.—Page 104, line 21, *instead of* Joseph Elijah Barnes *read* Joshua Elijah Barnes; line 35, *instead of* George Frederick Stoodley *read* Gerald Frederick Stoodley.

BENEVOLENT FUND.

A grant of Ten Pounds was made to a Registered Chemist and Druggist residing in London. Applicant blind.

PROVINCIAL TRANSACTIONS.

DUNDEE CHEMISTS AND DRUGGISTS' ASSOCIATION.

The first meeting of the Winter Session of the Dundee Chemists and Druggists' Association was held in Lamb's Hotel, on Wednesday evening, the 8th of September; Mr. William Laird, Vice-President, in the chair. The paper for the evening was on "Chloride of Lime and its Tests," by Mr. James Russell, which was treated in an able and interesting manner, showing that gentleman's research in his subject, and was met with the hearty approval of the members present.

THE INTERNATIONAL CONGRESS OF PHARMACEUTICAL ASSOCIATIONS AND UNIONS,

HELD AT VIENNA ON THE 9TH AND 10TH OF SEPTEMBER, 1869.

The third International Pharmaceutical Congress has been held this year at Vienna. Invitations having been sent to all incorporated associations of pharmaceutists to send two or three delegates to the Congress, the representatives appointed by different institutions, including two, the President of the Pharmaceutical Society and Professor Redwood, from this country, assembled on Wednesday evening, the 8th of September, at the Weisses Ross Hotel in the Austrian capital, for an interchange of introductions and friendly greetings. It was announced that the official business of the Congress would be commenced on the following (Thursday) morning in the great hall of the University, when the following questions would be submitted for discussion:—

1. Are independent schools of pharmacy desirable?

2. What advantages will arise from the syndic chambers proposed at the last Congress?

3. Is the medical supremacy in the regulation of affairs between the State and the Pharmaceutists in consonance with the present scientific and social status of the Apothecaries, and does it conduce to the advantage of the State, the community, or pharmacy?

4. What should be done to effect the greatest possible uniformity in the strength and composition of the remedies used in all countries?—a continuation of the Universal Codex question.

5. What are the best methods of assaying the organic alkaloids in drugs?

The meeting on Thursday commenced at 9 o'clock A.M., and Mr. Beckert, the President of the Austrian Pharmaceutical Society, having been provisionally voted to the chair, opened the session by greeting the delegates in the name of the Society he represented, and especially in the name of the pharmaceutists of Vienna. He referred to the questions proposed for discussion, some of which were of great importance, and he had no doubt would create a lively interest, especially that relating to the schools of pharmacy, which materially affected the means of elevating the pharmaceutical profession.

Mr. Waldheim, of Vienna, on behalf of the Viennese Pharmaceutists, expressed the satisfaction with which they welcomed the foreign delegates, and especially those from England, America, France, and Italy, to their city on this occasion. He hoped they would take an active part in the discussions, and had no doubt their opinions and conclusions would produce a favourable influence on the decisions of the different Governments with regard to the interests of pharmacy.

The President then proposed the appointment of three gentlemen, namely, Mr. Dankwortt, of Magdeburg, Mr. Trapp, of St. Petersburg, and Mr. Wolfrum, of Augsburg, to examine the credentials of the delegates. The following were found to be duly accredited:—

AMERICA, United States: Mr. Faber, of New York.

ENGLAND: Mr. H. Sugden Evans, President, and Professor Redwood, from the Pharmaceutical Society of Great Britain.

FRANCE: Robinet, Ex-President, and Mialhe, Vice-President, from the Société de Pharmacie of Paris; Giorgino, of Colmar.

ITALY: Mosca, of Turin.

NORTH GERMANY: Fritze, of Rybnik; Dankwortt, of Magdeburg; Habenicht, of Sigmaringen; Lehmann, of Rendsburg; Mirus, of Jena; Reimann, of Posen; Schmeisser, of Meiningen.

South Germany: Heimpel, of Lindau; Vorwork, of Speyer; Wolfrum, of Augsburg.

Austria: (1) *From the Austrian Pharmaceutical Society*,—Bancalari, of Marburg; Beckert, of Vienna; Daubrawa, of Neustadt; Dittrich, of Prague; Friedrich, of Vienna; Jarmay, of Pesth; Kalbrunner, of Langenlois; Klinger, of Vienna; Schiffner, of Vienna; Schlosser, of Vienna; Waldheim, of Vienna. (2) *From the Association of Viennese Assistants*,—Ritzinger, of Vienna; Suchanek, of Vienna.

Russia: Bjorklund, of St. Petersburg; Schuppe, of St. Petersburg; Trapp, of St. Petersburg.

Switzerland: Bilinski, of Caronge, from the International Association of Pharmaceutists.

There was also, besides these accredited delegates, a large number of Austrian, German, and other pharmaceutists, forming an assembly of nearly two hundred.

The following officers were elected by ballot:—

President—Dankwertt, of Magdeburg.

Vice-Presidents—Robinet, of Paris; Trapp, of St. Petersburg.

Secretaries—Klinger, of Vienna; Lehmann, of Rendsburg; and Vorwerk, of Speyer.

Interpreters—Waldheim, of Vienna, and Dittrich, of Prague.

Mr. Beckert having resigned the chair to his successor, the President elect declared the third International Pharmaceutical Congress to be open, and invited the members to enter upon the discussion of the questions submitted to them. Some of the questions he presumed would be referred to Committees, where they could be freely discussed, and reported upon at a subsequent meeting.

After some deliberation, it was decided that the first question, relating to schools of pharmacy, should be discussed in open meeting; that the second question be referred to a committee, consisting of Bjorkland, Daubrawa, Evans, Friedrich, Giorgino, Jarmay, Mialhe, Robinet, Schlosser, Schuppe, and Trapp; and that the third question be referred to a committee, consisting of Beckert, Dittrich, Mirus, Reimann, Schmeisser, and Waldheim. It was not thought necessary to appoint committees for the fourth and fifth questions, but statements were promised to be made on these subjects at a subsequent meeting.

The President now invited a discussion on the first question, namely, "Are independent Schools of Pharmacy desirable?"

Mr. Schiffner had no doubt of the advantage of having independent schools of pharmacy, and hoped that, in the interest of those countries where such schools did not exist, members who had any experience with reference to them would give some explanation of their advantages.

Mr. Giorgino explained the constitution of the pharmaceutical schools in France. They were quite independent of medical control.

Mr. Trapp described the lower pharmaceutical schools for apprentices in St. Petersburg. He said that without the advantage of such schools accomplished pharmaceutists were but seldom produced; and the further extension of the schools would, no doubt, raise the status of pharmaceutists.

Dr. Schlosser was of opinion that pharmaceutical schools ought to form a separate and independent part of the provisions for instruction provided at the Universities.

Mr. Robinet did not think it desirable to separate pharmaceutical schools from the Universities, but that they should form distinct and independent parts of the means for instruction provided there.

Mr. Trapp thought that some misconception might arise from the use of the term "school," as the provisions made for the instruction of the junior and senior classes might be confounded. He thought it of importance that none but pharmaceutists should be engaged as professors for the instruction of pharmaceutical students, as they were best acquainted with the requirements of such classes.

Mr. **Faber** explained the conditions of pharmaceutical schools in America. The schools, where they existed in that country, were established by the pharmaceutists themselves, and they were independent of the medical institutions. The instruction also was generally given by pharmaceutists, and the means thus provided were often very efficient. Certain privileges had been granted to pharmaceutical associations, and it was the duty of these to watch over the education of the rising generation. Regulations were made by these bodies with reference to the sale of poisons and the examination of apprentices, and these from time to time were authorized by the Government.

Dr. **Schlosser** advocated the creation of lower and higher classes, the lower for apprentices, and the higher for advanced pharmaceutical students in the Universities, but distinct from the other University faculties.

Mr. **Dittrich** agreed with Dr. Schlosser with regard to the higher pharmaceutical classes, but thought the arrangement for the lower classes was hardly comprised in the question before the meeting.

Mr. **Kalbrunner** thought that apprentices might obtain instruction in the natural sciences at the schools called "*real Schulen*."

Mr. **Reimann** thought the pharmaceutists of North Germany would not desire the establishment of independent schools, as the students were accustomed to learn what and where they pleased.

Mr. **Wolfrum** made a similar statement to that of the previous speaker, with reference to South Germany. He thought it was not new schools, but more independence from control in those which existed, that was wanted, and especially that there should be able pharmaceutists as professors.

Mr. **Jarmay** thought that too much freedom in the means of acquiring professional knowledge, although theoretically just, would not be practically of advantage to pharmaceutists.

Mr. **Schiffner** considered that the creation of independent pharmaceutical schools would afford the means for talented and well-instructed but poor pharmaceutists to establish themselves as professors, and this would be a great advantage to the profession, and would act as a stimulus to rising young men.

Mr. **Robinet** thought that everything should be done that was possible for promoting scientific education among pharmaceutists. He believed that the profession once free, pharmaceutical schools would be a necessity.

Professor **Redwood** explained what had been done in England towards providing the means of instruction for pharmaceutical students. Before the establishment of the Pharmaceutical Society no separate and independent pharmaceutical schools existed, and the instruction that could be obtained at the medical and other existing schools was not found to meet all the requirements of their students. It had always been the object of those who took the most active part in extending pharmaceutical education in England to encourage the establishment of independent professional schools, and he believed it was very important to the interests both of the medical and pharmaceutical professions that students in those professions should be educated separately.

Dr. **Mirus** advocated the appointment of pharmaceutists as professors in those departments of the Universities appropriated to the teaching of pharmaceutical subjects.

Dr. **Schlosser** thought that the ideal freedom claimed by Messrs. Reimann and Wolfrum in regard to pharmaceutical learning would not practically advance the interests of pharmacy. What he desired was the creation of independent pharmaceutical schools with pharmaceutists as professors, the schools being attached to the Universities.

After some further discussion, a resolution was passed to the following effect:—

> "That higher pharmaceutical schools, as an independent part of the Universities, with pharmaceutists as professors in the classes relating exclusively to pharmacy, would be of the greatest advantage to the interests of the public and also of the pharmaceutical profession."

This concluded the proceedings of the general meeting on Thursday morning. In the afternoon of that day the Committees met and prepared their reports to be presented to the meeting on the following day.

Friday, 10th of September.—The business was commenced by reading the minutes of the previous day's proceedings.

Dr. **Schlosser** reported the result of the deliberations of the Committee on the second question, namely, "What advantages will arise from the syndic chambers proposed at the Paris Congress?"

The Committee were unanimously in favour of establishing these syndic chambers as representatives and mediums of communication between the pharmaceutical bodies and the Government. They might be formed of delegates from pharmaceutical corporations within certain districts. Their duties would consist in representing the profession to the supreme authorities, informing such authorities of the requirements of the profession, originating new laws affecting the profession, and acting as the executive body in carrying existing laws into effect.

Dr. **Schlosser** remarked that a somewhat similar institution had long existed in Austria.

Mr. H. **Sugden Evans** said the functions of the proposed syndic chambers appeared to him to be similar to those of the Society he had the honour to represent and preside over, namely, the Pharmaceutical Society of Great Britain. It might, therefore, be interesting and useful to the Congress if he briefly stated the powers and constitution of that Society. He then explained the position of the Society as custodian of the registers of legally qualified Chemists and Druggists of different grades, and as the executive body intrusted by the Government with the responsible duty of testing the qualifications of those whose names are entered in the Registers, and of otherwise carrying into effect the laws by which the practice of pharmacy is regulated in Great Britain. He described the constitution of the Society, and pointed out the importance of the position it occupied, referring especially to the beneficial influence it was enabled from its position to exert in raising the status of the pharmaceutical body. He alluded also to the circumstance that, in accordance with the free-trade opinions which prevailed in England, there were no restrictions placed upon the manner in which the required qualifications of those who were registered were obtained, nor upon the exercise of their profession by those who were legally recognized as qualified men.

Mr. **Mosca**, of Turin, gave some explanations with reference to the state of pharmacy in Italy, and advocated the creation of syndic chambers.

The question was then put, and the delegates voted unanimously for the creation of syndic chambers.

Dr. **Reimann** reported that the Committee to whom was referred the third question, "Is the medical supremacy in the regulation of affairs between the

State and Pharmaceutists in consonance with the present scientific and social status of the apothecaries, and is this intervention for the advantage of the State, the community, or pharmacy?" had decided unanimously to answer "No." The existing regulations which might have been useful a hundred years ago, when pharmaceutists were mere tradesmen, had ceased to be applicable now that pharmacy was a scientific profession. The extent and importance of the qualifications now required for the practice of pharmacy were such, that medical men, with their other studies, could no longer keep pace with the pharmaceutist, and were, therefore, unable to decide correctly in reference to pharmaceutical affairs. It was degrading to the members of an honourable profession to be put under the supervision, and made subject to the control of members of another profession. If the Government thought that pharmaceutists were not sufficiently educated to be intrusted with the management of their own affairs, they should demand a higher qualification. They would all agree that pharmaceutists had an equal claim with physicians and lawyers to the right of managing their own affairs, and to the protection of their professional privileges.

The question being put, the members present, as with one voice, answered, "No, not at all."

With regard to the fourth question, "What should be done to effect the greatest possible uniformity in the strength and composition of remedies that are used in all countries?"—Mr. Waldheim, of Vienna, gave the explanation he had promised at the previous meeting. He stated that the Pharmaceutical Society of Paris was at present engaged in preparing a small work which would contain the remedies most generally used in all countries, and especially the most important and powerful remedies, such as hydrocyanic acid, tincture of opium, Fowler's solution, the mineral acids, etc. etc. The formulæ for the preparation of these medicines would be given according to the principal Pharmacopœias, as for instance, the English, French, German, etc., and questions would be put as to the reasons for having different forms and for preferring any one of these to the others. This work would shortly be ready for publication, and would then be sent to the different pharmaceutical corporations with a request that it might be circulated among medical men and pharmaceutists, and their remarks made on blank pages with which it would be interleaved. It was anticipated that two objects would be attained by the use of this work. In the first place, it would show at a glance what differences exist in different countries in medicines having the same or similar names, and dispensers would be enabled to prepare correctly prescriptions written in foreign countries, thus securing to the public the supply of medicines such as the physician intended to prescribe. And then in the second place, the way would be prepared for the adoption of the most approved formula for each medicine which it might be expected would ultimately supersede the others. Mr. Waldheim concluded by proposing that the thanks of the Congress be presented to the Société de Pharmacie of Paris for undertaking this work, and that they be encouraged to proceed with their undertaking and complete the work as soon as possible.

This proposition was immediately assented to with acclamation.

The fifth question, "What are the best methods of assaying the organic alkaloids in drugs?" was not discussed, because no investigations on the subject had been undertaken as the basis of communication to the Congress.

Mr. Robinet observed that some of the Pharmacopœias already contained methods for assaying active drugs; and although it was desirable, if possible, to improve these methods, this could only be effected by a series of carefully conducted experiments.

Messrs. **Mirus**, **Trapp**, and **Waldheim** concurred in this opinion.

The **President** stated that the questions which had been submitted to the Congress having been disposed of, it only remained for them to consider what was the best method of communicating the conclusions that had been arrived at on some of the subjects to the several Governments by whom the desired changes might be effected. After a discussion on this point, in which Messrs. **Trapp**, **Schuppe**, **Robinet**, **Evans**, **Bjorklund**, **Faber**, **Mirus**, **Schlosser**, etc., took part, it was decided that the conclusions of the Congress, in the German language, should be sent to the ministers of state of the different countries represented in the Congress, and to all the members of the Congress. It was also suggested that the members should endeavour individually to make interest with their Governments in furtherance of the proposed objects, and that the expenses connected with these applications should be shared by the corporations represented in the Congress.

The **President** then inquired where and when the next Congress should be held.

It was determined that the fourth International Congress should take place after the lapse of three years; and it was left to a Committee, consisting of the Presidents of the five principal pharmaceutical associations on the Continent, namely, those of France, Russia, North and South Germany, and Austria, to make the necessary arrangements for it.

It was proposed by Mr. **Dittrich** and Mr. **Trapp** that the next meeting should be held at St. Petersburg, but the final decision on this point was also left to the Committee of the five Presidents.

The **President** (Dankwortt) invited the delegates to the celebration of the fiftieth year of the establishment of the Pharmaceutical Society of North Germany, which would be held next year at Dresden.

A cordial vote of thanks was carried by acclamation to the President for the able and impartial manner in which he had conducted the proceedings of the Congress; also to the pharmaceutists of Vienna, and especially to the Committee by whom the Congress had been organized, for the kind and cordial reception they had given to the members who attended from other parts.

The **President**, after returning thanks, declared the third International Pharmaceutical Congress concluded.

On the evening of Thursday, the 9th, the delegates were most hospitably and sumptuously entertained by the pharmaceutists of Vienna, in the hall of the Weisses Ross, where a banquet was provided to which about a hundred sat down. The utmost cordiality appeared to exist among all present; and a good opportunity was afforded for estimating the perfection to which an art, kindred to that of pharmacy, has been brought in Vienna, and also for observing the habits and manners of the Viennese on such jovial occasions, in both of which respects the impression produced upon those who then visited Vienna for the first time was of a very gratifying nature.

On Saturday, the 11th, the delegates were again entertained by the Viennese pharmaceutists; and a rich treat was provided in the form of an excursion to the Styrian Alps. A special train was provided for the excursionists at 8 o'clock in the morning, by which a party of about 200 ladies and gentlemen were conveyed to the greatest elevation of the Semmering Pass, among the mountain peaks of Styria. The railroad, itself one of the wonders of engineering art of this description, pursues a circuitous course among and through the mountains, constantly ascending, until it attains to a height of several thousand feet, the views along the line being of a most diversified and often surpassingly beautiful character. After several hours' travelling along this line, the train reached the intended point, that of greatest elevation, about 1 o'clock, at the station of Murzzuschlag in Styria, where the company was received with a salute of guns from the mountain-top, and a band of music at the station. Tables had been laid out here, at which the guests partook of a hearty dinner, followed by several speeches and an attempt at an English "hurrah." At two o'clock, the train, which had waited for the company, commenced the return journey, running chiefly by gravitation. At Breitenstein station many of the company got out, and walked through the rocky mountain passes from thence to Klamm, a walk which occupied about three hours, but amply repaid the exertions of those who undertook it, by revealing fresh beauties in the scenery, now viewed from the lower elevations. At Klamm the train had waited to pick up the straggling pedestrians, who were not sorry now to substitute the expenditure of steam power for that of muscular energy. Again started on the downward course, the train reached Vienna at 9 o'clock in the evening, after a day's excursion the incidents of which must remain indelibly fixed in the memories of those who had the good fortune to be present.

BRITISH PHARMACEUTICAL CONFERENCE.

MEETING AT EXETER.

Second Day's Sittings, Wednesday, August 18th.

The Conference met at 10 A.M.

The **President** laid before the meeting a communication which had been received from Mr. John Mackay, Hon. Sec. of the North British Branch of the Pharmaceutical Society, inviting the Conference to hold its meeting in 1870 in Edinburgh; also, one from Mr. E. Davies, Hon. Sec. of the Liverpool Chemists' Association, conveying an invitation to Liverpool for the same year.

The **President** said that it was very gratifying to have such cordial assurances of a welcome reception, and it was evident that the Conference would be heartily received at either of the two cities which had now honoured it by invitations. In accordance with usual custom, the decision as to the place for next year's meeting would stand over until the final meeting of the Conference on Tuesday, when the decision of the British Association upon a similar question would be known.

Professor Attfield brought up from the Executive Committee the following report on the question of a Year-book of Pharmacy:—

REPORT OF SUB-COMMITTEE ON A "YEAR-BOOK OF PHARMACY."

The Executive Committee appointed the following five of its members a Sub-committee to consider the desirability of recommending the Conference to undertake the publication of a 'Year-book of Pharmacy,' viz.:—

Professor Attfield, Professor Bentley, Mr. Brough, Mr. Carteighe, and Mr. Reynolds.

The Sub-committee presented the following as their conclusions:—

1st. That the publication of an annual abstract of the progress of pharmacy is eminently desirable, and that its accomplishment would be in harmony with the original intention and constitution of the Conference. Further, that the Conference would be materially strengthened by producing such a work, which alone would supply it with a *raison d'être*, and would increase its influence over members who do not attend its meetings.

2nd. That the "Annual Report on the Progress of Pharmacy," included in the "Proceedings of the American Pharmaceutical Association," illustrates the general plan which should be adopted, but that the abstracts of papers should be fuller than in the work quoted.

3rd. That the undertaking requires the services,

(1). Of a *paid* editor, to be selected by the Executive Committee after due advertisement.

(2). Of an unpaid "Committee of Publication," consisting of three or four members.

4th. That the annual volume of the "Proceedings of the Conference," including the Year-book, may in future make an octavo of about 500 pages of clear type, larger than that used for original articles in the 'Pharmaceutical Journal,' a page to contain the matter of two-thirds of a page of the 'Pharmaceutical Journal.'

5th. Two modes of publication are open for selection; the following estimate of ways and means being arrived at after consultation with the Treasurer of the Conference. An effort to increase the number of members might be expected to raise this to one thousand, yielding a gross annual income of £250. The ordinary expenditure of the Conference is so light that out of this sum nearly £200 might without imprudence be engaged to a Year-book Fund.

The first mode of publication that offers itself is that of the Conference undertaking the volume at its own risk of profit or loss. Estimates for *printing* an edition of one thousand copies have been obtained from two houses, which show that £100 would cover this, the chief expense, whilst the editor, paper, binding, and publishing expenses would be met by a sum between £100 and £150. From a total gross cost of £200 to £250, the Committee feel justified in deducting £50 as proceeds of advertisements. An increase in the edition printed to fifteen hundred would reduce the cost of each copy by 15 per cent.

The second and alternative method of publication consists in transferring the copyright and all risks to a publisher. The Sub-committee have received from a leading and particularly eligible firm a definite offer to the following effect:—That for the sum of £200 the publishers would supply the Conference with one thousand copies, the only other expense to our association being the editor's salary.

The Sub-committee have considered the respective advantages of the two schemes, and give the following as their conclusions:—That the use of the Year-book as a means of adding members to the Conference is a more desirable object than the attainment of a large outside sale, although facilities for purchasing the work should be given to non-members at home and abroad. That independent publication would be the less costly of the two schemes as now submitted, and should be adopted, unless altered terms should be offered.

As a consequence of the foregoing, the Executive Committee recommend that arrangements should forthwith be made for the publication in 1870 of such a volume as has now been indicated.

Mr. Palk (Exeter) moved "That the report of the Executive Committee on the subject of a Year-book of Pharmacy be received and adopted, and this Conference approves of such an undertaking as it recommends."

Mr. G. Cooper (Exeter) seconded the motion.

Mr. Schacht (Clifton) expressed his satisfaction with the recommendation of the Executive Committee as to the issue of such a record. He felt some hesitation as to the equal acceptance of the opinion that the Conference should be its own publisher, and he thought this part of the scheme might be reconsidered.

Mr. Brady (Newcastle-on-Tyne) said that although he was not a member of the Sub-Committee which had taken charge of this question, yet that Committee had, from time to time, consulted him as Treasurer of the Conference, and it was evident that from holding such an office, the subject had a peculiar interest for him. It was on the ground that self-publishing was the cheaper plan of the two that the Committee recommended its adoption, a decision which was based upon the comparison of actual estimates obtained.

Mr. Schacht inquired if offers had been asked from more than one publisher.

Mr. Reynolds said that the Sub-Committee had thought it proper in the first place to consider the question of the two systems of publication, rather than the merits of rival publishers. Upon the evidence, there was no other conclusion to be arrived at than that the Conference must be its own publisher, unless, as already expressed in the report of the Committee, better terms were offered. He believed that a publisher could afford to take the work for less money, and the Executive Committee would take care that any revised estimates were duly considered. The present resolution did not bind the Conference to either plan.

Mr. Savage (Brighton) expressed his confidence that the Executive Committee would decide rightly in the matter.

Mr. Balkwill (Plymouth) remarked that the sum requisite to produce such a work was a mere trifle for the chemists of this country to bear. The main question which occurred to his mind was, what should be its scope? Should it embrace theoretical chemistry, for instance, or therapeutics? He should be very glad if the latter subject could be introduced.

Mr. Stoddart (Bristol) pointed out that the introduction of therapeutics would be a departure from the domain of pharmacy, and an encroachment upon the province of the medical profession.

Mr. Atkins (Salisbury) said that amongst many members there would be a desire for practical business hints, as well as for more scientific information. If such matter were to be included, he could vouch for the cordial reception which would be given to the work.

Professor Attfield said that he would attempt to give a clearer conception of the scope of the proposed 'Year-book.' As was known to all members, the Proceedings of the Conference were now issued as an annual volume soon after each meeting. This would be continued; but, in addition, it was proposed to bind up with it an abstract of all papers upon pharmaceutical subjects published during the year, whether at home or abroad. Such an abstract was properly described by the name that had been adopted for it, viz. 'A Year-book of Pharmacy.' By way of illustrating the exact nature of such an abstract, he would refer the meeting to the Report on the Progress of Pharmacy contained in a recent volume of 'Proceedings of the American Pharmaceutical Association,' which was alluded to in the Report of the Executive Committee. The abstract now referred to occupied about 150 pages, the subjects being duly classified under the following heads:—

1. *New Books on Pharmacy* and allied subjects, home and foreign.
2. *Pharmacy.* Subdivided into Apparatus; Processes; Cerates, Ointments, etc.; Extracts, Mixtures, Pills, Plasters, Tinctures, etc. etc.
3. *Materia Medica.* Subdivided into Vegetable Drugs,—these classified by Natural Orders, Animal Drugs, Minerals; Medicinal Chemicals, viz. Inorganic Compounds, Organic Compounds.
4. *Inorganic Chemistry*, classified according to the elements.
5. *Organic Chemistry.* Acids; Bases; Alcohols; Hydrocarbons; Starch, etc.; Glucosides; Chromogens; Proteine Compounds.

Researches which had been published during the year upon the above subjects were briefly noticed, the salient points being given, and the author's name and a reference to the periodical in which his paper had been published.

Mr. Andrews (London) expressed the opinion that such a publication would greatly increase the influence of the Association in places which it did not visit.

The resolution was unanimously agreed to.

ON OPPORTUNITIES FOR PHARMACEUTICAL EDUCATION IN THE PROVINCES.

BY MR. G. F. SCHACHT.

It is not perhaps advisable (even were I competent to the task) that the valuable time of this Conference should be occupied with any attempt of mine to add a single grace to the already ornate tribute of praise which so many able men have, ere now, helped to raise in honour of Science and her eternal charms. The subject has long constituted, and still continues to constitute, a theme that never fails to enlist, on the one hand, the highest eloquence amongst us, and, on the other, the utmost sympathy and attention.

I may perhaps venture to indulge myself with the expression of a hope that topics of such high import will ever be welcome in a company of pharmaceutists, but they are not my theme to-day,—the ears that I address have long been open to callings such as these, and, as I think, they that heard have answered.

Neither shall I trouble you with any special efforts to exalt the impression of the dignity, or deepen the conviction of the responsibility that attaches to our duties. These considerations, with their important and interesting issues, have also been enlarged upon frequently and well. I leave them, therefore, as requiring no advocacy from me, and shall rather assume in this paper (as I believe I am justified in assuming) that the labourers to whom I have referred have not laboured in vain,—that their leaven has worked well,—that the members of our entire body are fairly alive to all their obligations,—and that young and old are alike regarding scientific study, in, at least, one of two aspects, namely, either as a delight or as a necessity.

With all gratitude, then, to those whose labours have borne so fair a fruit, I venture upon the consideration of a question of at least equal practical importance.

Hitherto we have been chiefly solicitous to create a demand, is it not now time to consider the supply? Public opinion has at last confirmed in a very practical manner the doctrines we have been so long advocating; an Act of Parliament has been passed which necessitates a certain standard of scientific proficiency in every pharmaceutist; for this, if what I have said be true, we are largely responsible; is it not then but simply fair that we now set ourselves to provide sufficient opportunities for the culture of those attainments we have done so much to make compulsory?

Let me first say a word as to numbers. I find upon the authority of the Register lately issued in accordance with the provisions of the Pharmacy Act, that there are 11,638 Chemists and Druggists in England, Wales, and Scotland. For several reasons I have determined to limit the scope of my remarks to England and Wales. As the population of Scotland is to that of England as one to seven, the deduction of one-eighth of the above number (viz. 1454) will give 10,184 as the number of master Chemists and Druggists in England and Wales. The proportion which the Assistants and Apprentices bear to the principals is a little difficult to determine absolutely, but, from the evidence of a few lists I have made of their exact numbers in places of somewhat varied character, I come to the conclusion to estimate them as 1⅓ to 1. This would give the number of the Assistants and Apprentices, or the student class of our body, as I shall call them, as 13,578. Again, I estimate the average length of time a young man remains in the ranks of this class (taking into account the chances of his removal by death, by change of occupation, and by promotion to the rank of master) to be about eight years. Hence these 13,578 are renewed every eight years, in other words, an average of 1693 fresh young men are *annually* entering the business. In the future, therefore, when matters have settled into their normal working, we may expect to have to provide opportunities for scientific instruction for about this number (1693) annually. But in the meantime it must be remembered, that a large proportion of the *existing* student class (the 13,578) have never yet been scientifically educated, and that they will be pressing for opportunities also. What that proportion may be I have but few data to judge from, but if it be only half, then 6789, whose need is urgent, must for the present be added to the list, raising the number of probable annual applicants to about 3000.

This, then, is something like the number of young men who, with more or less earnestness, are responding to the appeals that have been made to them, and to the necessities that have been created; but when they demand, where shall we go for the commodity you have now made a necessity,—what can we answer? The two sciences upon which pharmacy is based are chemistry and botany. What opportunities exist throughout the length and breadth of the land for the study of chemistry and botany?

London is undoubtedly largely provided with good means of supplying a pharmaceutical student's wants. Regard being had to the number of students *only* that really belong to, or are indigenous to London, the provision might be said to be adequate. First and foremost stands the Institution in Bloomsbury Square, without doubt the best school for the pharmaceutist, both for quality of instruction and moderateness of cost. Then there are excellent courses of lectures at the two Colleges—King's and University, at the various medical schools, at the College of Chemistry, and at other places, so that for a young man living in London it is only necessary that he have the inclination and sufficient leisure, and he can enjoy the highest scientific instruction.

But what is the *provincial* to do? Now I may as well here refer to a proposition that has been frequently urged, that every young pharmaceutist at the completion of his apprenticeship (wherever that may have been fulfilled) should undertake a course of science at the Society's Laboratories and Lecture Rooms, and there and then pass his examinations. To the desirability of such a plan, when practicable, I entirely agree, but it is manifestly limited by two important conditions—1stly, the ability of the student to afford the time and money, and 2ndly, the amount of accommodation at Bloomsbury Square. Even to those who reside in London, it involves a larger outlay than many can afford, whilst to those who live in the provinces a much larger expenditure still is involved; moreover, if our estimate of numbers be anything like correct, it is clear the establishment won't hold them. It really can accommodate only about its own proportion of the new men annually introduced into the business, that is, about ⅟th of the entire number; so our question, "What is the provincial to do?" remains still to be considered.

Now the opportunities offered in the provinces may perhaps be conveniently considered under three heads:—

1st. Local Pharmaceutical Societies.

2nd. Local Medical Schools.

3rd. Local Classes in connection with the Science and Art Department of the Committee of Council on Education.

Let us take each of these divisions in turn, and see how far they meet the necessities of the case.

1st. Local Pharmaceutical Associations exist in seventeen towns, viz. Liverpool, Lincoln, Leeds, Birmingham, Ashton, Plymouth, Nottingham, Manchester, Bradford, Sheffield, Sunderland, Hull, York, Halifax, Newcastle, Bath, Exeter.

I addressed notes to the Hon. Secretaries of each of these Associations inquiring the scope of their respective plans, and especially whether they include systematic instruction in chemistry and botany, and I have tabulated the contents of the replies as under:—

Place.	Classes on.	No. of Lectures.	Fee.	Average Attendance.	Observations.
Ashton-under-Lyne . .	Use the Manchester School.				
Bath . . .	None.				
Bradford . .	Chemistry	12	...	...	A recent experiment.
	Botany	12			
Birmingham .	Chemistry	12	8s.	...	In association with the Midland Institute, which is supported in part by the town.
	Botany	12	8s.		
	Practical Ch.	...	7s.		
Exeter . . .	Chemistry Botany	Courses	5s. & 10s.	...	S. and A. Classes.
Hull . . .	Chemistry Pharmacopœia	A Course	21s.	9	Recently established.
Halifax . .	...	...	...	...	In course of formation.
Leeds . . .	Ch. Inorganic	28	21s.	25	Employ Institution Laboratory.
	Ch. Organic	28	21s.		
	Ch. Practical				
	Botany	26	5s.	12	
Lincoln . .	None	...	...	...	Weekly meetings for mutual instruction: desultory subjects.
Liverpool . .	Chemistry	...	...	...	In association with Queen's College.
	Botany				
	Mat. Med.				
Manchester .	Latin	12	5s.	50	
	Chemistry	20	7s. 6d.	62	
	Botany			28	
	Mat. Med.	12	5s.	58	
Newcastle .	Ch. Principles	6 months' Courses	£6. 6s.		Durham University.
	Ch. Physics				
	Ch. Inorganic				
	Ch. Practical				
	Botany	8 months			
	Mat. Med.				
Nottingham .	Latin	...	...	...	S. and A. Classes.
	Chemistry				
Plymouth .	Botany	...	2s. 6d.	...	Chemistry to be included next session.
	Mat. Med.				
Sheffield . .	Chemistry				
	Botany	25	10s. 6d.	20	
	Mat. Med.	20	7s. 6d.	12	
Sunderland .	None.				Too much "vis inertiæ."
York . . .	None.				Great indifference.

It will be seen that of these seventeen Pharmaceutical Associations, eleven only have organized any plans for systematic scientific teaching, and some of these are far from complete. From others, however, very gratifying reports were received. At Manchester, for instance, they are able to speak of an average attendance at their lectures of fifty pupils. At Leeds, Liverpool, and Sheffield, a resolution seems to prevail that their schools shall be really worthy of their respective localities, and at Newcastle, the efforts of local pharmaceutists have been so far recognized and supported by the authorities of the College of Medicine, that the result has been the establishment of a Chair of Pharmacy in Durham University, and distinct facilities have been offered for complete and systematic, rather than fragmentary study. This seems worthy of especial mention as the programme for the Session 1869–70, just issued, places medicine and pharmacy side by side, and defines equally the proper order of study in each. In point of fact, the section of pharmacy becomes a "faculty" in all but the name, and thus the claims of pharmacy as a profession are for the first time recognized by an ENGLISH University.

I must not, however, enlarge upon particulars, interesting and useful though they be, but must content myself with the general statements that the Pharmaceutical Associations, in connection with which chemistry and botany are systematically taught, are eleven in number.

2nd. Medical schools exist in nine towns, viz. in Cambridge, Birmingham, Bristol, Manchester, Liverpool, Leeds, Newcastle, Sheffield, and Hull. At all of these chemistry and botany constitute a portion of the general curriculum of study. From what I can learn, however, these subjects do not generally rank as of the highest importance in the *medical* students' course; they are therefore most probably not the best taught subjects in the school, and the fees (except where mitigated by arrangement with the local Pharmaceutical Society) are high. It must also be remarked that the towns I have just named, with the exception of two, have been already mentioned as containing organized pharmaceutical associations.

3rd. Science schools are to be found in 232 towns in England and Wales. The word science is here employed to include twenty-three subjects. They are not necessarily all taught at every school, but a selection, determined pretty much by the demand, constitutes its curriculum. I find that of these 232 towns, there are 13 whose schools include both chemistry and botany in their schemes; 86 that include chemistry and not botany; and 2 that include botany and not chemistry (I am speaking of the session 1868-9). But again I must state that, of these 13 at which both chemistry and botany are taught, 3 have been already mentioned as possessing organizations in connection with local pharmaceutical associations.

These are all the organizations for the systematic study of chemistry and botany in the provinces with which I am acquainted. It is quite possible some may have escaped my knowledge; I hope such is the case, but I fear they can be but few. And so we are brought to this, that about 1700 would-be students spread all over the country may be supposed to be constantly seeking for scientific instruction, and that *fair* opportunities are offered them in 29 towns, and *half* opportunities in about 88 more.

I think every gentleman in this room will echo me in the sentiment that this is a condition of things to be deplored, and, if possible, remedied.

But the mere expression of a sentiment will work no miracle in facts; nor can either the enthusiasm or labour of any *individual*, however giant-like his powers, be of much avail in a case like this. It is the hearty, earnest, co-operative work of the *many* that alone can produce the change we hope. I shall take the liberty presently of speaking of a little work done upon a small scale, and adapted perhaps for small conditions, but attended with very hope-ful results (and this, indeed will be my excuse for intruding myself before you at all); but before doing so, I am anxious to take advantage of this gathering for the far more important purpose of getting expressions of opinion as to the best method of *general action*,—so that, perhaps, with our faces resolutely set to what commends itself to the majority as the most promising course, we might, in our several localities, urge our labours upon some common plan whereby not only should we be more likely to commence aright, but comparisons of progress might from time to time be reported, modifications suggested, and the general result thereby greatly helped.

For the purpose, therefore, of eliciting the views of others, I hazard a few opinions of my own.

In the first place, I consider the universal establishment of local pharmaceutical associations, as nuclei of action, to be wellnigh indispensable; and I am of opinion that the more a perfectly unselfish object, such as the one I am advocating,—systematic scientific teaching for the juniors,—is kept resolutely to the front, and all dangerous and insidious topics, such as "uniformity of prices," "good fellowship," and the like, avoided, the better will be their chance of general success.

Naturally, every local association must determine for itself the details best adapted for its own special circumstances; but it must be certainly wise in all communities of limited extent to concentrate rather than to divide energy, and to develop existing agencies rather than to weaken them by unnecessary multiplication. I have already indicated that certain agencies, viz. medical schools and science schools, lie ready to the hand of our associations in many places. With regard to the former, they are perhaps too few in number to be of much general help; but the teaching in the *science schools* might be employed with the *greatest advantage* wherever they are found to exist. It must be remembered that the principles upon which Government aid is extended to the cause of education are "help to those who help themselves," and "payment for results." The teacher is rewarded by grants of money in proportion to the number of pupils he can pass through the ordeal of the annual Government examinations and the positions they can then take. His utmost personal interest in the work is thus secured; and the pupils are encouraged, in the first place, by the smallness of the fees the teacher is thus enabled to demand, and afterwards by rewards of prizes and honours. Our local associations will therefore be sure of the hearty co-operation of all the science teachers of their neighbourhood, who will naturally be glad to welcome the constant supplies of pupils which our ranks are likely to afford; and they will also enlist more of the confidence of the pupils, who will be sure to appreciate the advantages offered by a thoroughly well organized system of teaching. In those places where at present *both* our subjects are not taught, an effort might be made to show the authorities of the schools that a fair number of pupils are ready to attend. This might frequently be sufficient to cause the opening of the required class.

Even in places where no science classes yet exist, our associations might still look in this direction for help. The Department is thoroughly liberal in its scheme, and imposes as few limitations as possible upon the bestowal of its aid. An individual who has the requisite knowledge can without much difficulty become a "recognized teacher," after which he may claim that his pupils be included in the annual examinations, and that he himself be "paid for the results," even as though he constituted a portion of an established science school. Ordinarily, before an individual can become a "recognized teacher," he must himself have taken a first or second class in the subject at one of the annual Government examinations. Exceptions, however, are made in the case of a candidate who has taken any university degree, or has obtained the associateship of the Royal School of Mines or the Royal College of Science, Ireland. Our associations therefore would only have to find such an individual, and induce him to procure the recognition of the Department, to at once enable themselves to arrange for moderate fees from their pupils, and thus indirectly to appropriate a Government grant.

From these considerations, therefore, I earnestly recommend all pharmaceutical associations to direct their special attention to the Science and Art Department of the Committee of Council on Education.

The question has been elsewhere raised, whether local Pharmaceutical Associations which have organized an efficient and *boná fide* system of scientific instruction, are not entitled to pecuniary help from the Pharmaceutical Society of Great Britain?

This appears to me to be a question which it is perfectly competent for any member of that Society to raise and discuss among his fellow-members, but not to be quite legitimate here. The Pharmaceutical Society occupies the somewhat anomalous position of a private society intrusted with certain public duties. The way in which those public duties are performed is open to the criticism of the whole world, but the distribution of its funds must be left to the decision of its members only. I allude to the topic, therefore, merely for the sake of explaining why I do not enlarge upon it.

But even if provincial Pharmaceutical Associations and science classes existed in every town that contained a dozen pharmacists, there would still be many a student far from such wholesome influences. In such cases I suggest the trial of an experiment similar to one I shall now describe.

On the first Tuesday of last October I commenced a series of "Readings in Chemistry," and invited the attendance of the Assistants and Apprentices of my neighbourhood. Ten individuals, with more or less regularity, responded to my invitation. The book selected was Mr. Roscoe's 'Elementary Chemistry,' and the plan adopted was the following:—A portion, usually one of Mr. Roscoe's own chapters or lessons, was read by myself; the author's questions at the end of the book were then looked over, and each student was invited to prepare the answers in writing and bring them to the next reading. Our first business, then, at each meeting was to go over these answers. I made that the opportunity to introduce any explanations of my own, unless especially questioned during the reading. By this method every point of importance was gone over three times,—first, at the original reading, then at home in writing out the answer, and again at the next reading when the answer was reported. This was continued for the first three months *twice* a week, and subsequently *once* a week, until the 1st of June, and so in eight months from the date of commencing we completed our book, with the following satisfactory result. An examination was held under the usual conditions. The candidates were ignorant of the questions intended to be proposed, and they answered them in writing without any reference to book, note, or individual. And these are the questions:—

1st. Explain the chemical difference between an element, a compound, and a mixture.

2nd. Enumerate the fundamental laws of chemical combination, and explain briefly Dalton's Atomic Theory.

3rd. Explain the word "atomicity" as applied to elements and to radicals, and give one example of a *monad* element and *monad* radical, one of a *diad* element and radical, and one of a *triad* element and radical.

4th. What are the types upon which chemists arrange the majority of chemical compounds? Give the type and one example of each type side by side.

5th. State the laws that regulate the expansion and contraction of gases under variations of temperature and atmospheric pressure, and give one illustration.

6th. What relation exists between the densities of gaseous bodies, simple and compound, and their combining weights.

7th. The percentage composition of an organic acid was found to be—

Carbon	40
Hydrogen	6·6
Oxygen	53·4
	100·0

and its silver salt contained 64·68 per cent. of silver. Deduce the formula, and name the acid.

8th. Explain what is meant by mono-, di-, and tri-atomic alcohols; give one example of each, with its actual composition and typical formula, and mention the most important derivatives in each series, with the typical formula of each derivative.

9th. Write the respective formulæ of the yellow and the red prussiates of potash; and mention the characteristic behaviour of each with the salts of iron.

10th. Give the chief tests for the salts of zinc, magnesium, aluminium, copper, silver, and lead.

The answers were forwarded for estimation to Dr. Attfield, who was good enough to report upon them in the following words:—

17, *Bloomsbury Square, W.C., June* 8, 1869.

MY DEAR SCHACHT,—The following table contains the results of my analysis of the examination papers you forwarded yesterday:—

Number of question .	1	2	3	4	5	6	7	8	9	10	Totals.
Full value of answer .	9	40	19	9	20	10	20	20	12	24	183
"X. Y. Z."	9	10	10	9	20	10	20	16	0	0	104
"Bristoliensis" . .	9	10	6	6	8	0	0	6	0	0	45
"Finis"	9	15	12	7	13	10	20	16	0	0	102
"Semper Idem . .	6	15	3	4	5	10	0	3	10	0	56

"X. Y. Z." and "Finis" are practically equal, and their papers are about twice as good as those of "Semper Idem" and "Bristoliensis." The latter gentlemen have done quite as well as I could have expected from your description of the course of reading they have gone through; the former either possess unusual ability, or have supplemented your class-work by much home-study. The general character of the questions and answers shows me that your excellent plan of mutual instruction has been carried out in a most judicious manner, the leading principles of chemistry forming, apparently, the staple of your conversations. I hope you will give publicity to your scheme, for I am convinced that, short of direct professorial instruction, and the actual performance of experiments, no method of learning is likely to be so successful; certainly no method whatever is so practicable for men engaged in the practice of pharmacy during the greater part of every day. Not the least advantage of the system is the occasion it affords of free interchange of thought and feeling between the followers of a common calling.

With best wishes for continued success, and thanks for the opportunity you have given me of familiarizing myself with this new feature of pharmaceutical education,

Believe me, my dear Schacht,

Yours very faithfully,

JOHN ATTFIELD.

To this high testimony to the success of my experiment, I have only to add that, with one exception, my pupils were all beginners in chemistry, and that there was not one atom of cramming from beginning to end. All that was acquired was well understood and legitimately stowed away, and they left off with a most healthy desire for more. Where doubt or diffidence at first existed, interest, and finally enthusiasm, prevailed; and, at the close of our labours, I had the pleasure of receiving a most gratifying address, one sentence of which, as having general and not personal significance, I quote, "having advanced so far, we shall feel more encouraged to continue our endeavours to qualify in the higher branches of the science."

This, then, is my experiment,—I wanted to try if anything might be done for pharmaceutical education by a commonplace man under commonplace circumstances,—I *have* tried,—and, if in telling you about it I have been somewhat minute, it was because I wanted you to join in the verdict. I am bold to think you will agree that a good deal was done. Those questions are not easy for beginners, and yet my young students were found to be nearly equal to them. But I am also anxious not to overexalt the merits of my particular form of work. On the other hand, I wish to record my conviction that a great deal more would have been done, had the opportunities offered them been more favourable. Chemistry is an experimental science, and botany one of careful and minute observation of natural facts,—the laboratory and the experimental lecture are the proper school for the one, and the field and the microscope for the other; it is true, however, that for the full study of either, a certain amount of book-work is necessary, and, in that part of the business, I gave these young men some help. One other consideration also deserves mention, viz. that our success, such as it was, goes to prove the truth of my assumption, that our juniors are ready to avail themselves of all fair opportunities that are offered them.

I say, then, that under certain circumstances, and for certain purposes, "readings in chemistry," and, perhaps, "readings in botany," might be looked to as useful elements in pharmaceutical scientific training; not the *best*, but available, perhaps, at times when nothing better is to be had; and be it remembered, no title or diploma is here required. Given a good book and a little wholesome enthusiasm, and any master pharmaceutist may be sure to bring about him an attentive and willing class. The book I selected is a good one, but there are many to choose from, and there is one that will be in our hands in a few months which, from what I have seen, I think will probably commend itself to us pharmacists before all others,—I mean the new edition of Dr. Attfield's 'Chemistry.'

But let us ever remember, no book-work *alone*, however excellent in kind, is sufficient for our purpose; and I should wish my last line to be an effort to urge upon every provincial pharmaceutical association, to adopt as the very basis of its organization, the provision of the best systematic, experimental, and practical scientific teaching that its locality can supply.

The PRESIDENT remarked that the warm reception given to this paper showed how much approval it had met with. It was full of matter of the deepest interest; and Mr. Schacht's description of his educational experiment proved how excellent a teacher he was. He could not too strongly express his admiration of the untiring zeal with which the author had continued his well-directed labours for so many months. He invited a discussion upon the paper.

Mr. BALKWILL described a plan which had been adopted at Plymouth, where a few chemists had undertaken to give instruction in Materia Medica to a class of about twenty assistants and apprentices. The class met every two or three weeks, sometimes at one house and sometimes at another, and the duty of instructing it was divided amongst the employers. This method was not so desirable as a more uniform one would be, but it did some good work.

The President of the Pharmaceutical Society (Mr. **Evans**) said that it might encourage the promoters of such local education, when he told the meeting that some of the best students who had offered themselves for examination at Bloomsbury Square, during the past twelve months, were young men who had studied in the provinces.

Mr. **Brady** (Newcastle-on-Tyne) said that a few years since he was engaged, conjointly with his friend Mr. Proctor, and one or two others, in a scheme of local pharmaceutical education. This consisted of courses of lectures, followed by discussion and questioning. The result was satisfactory during a period of two or three years, for which the system was carried on, but at the end of that time the supply of students was exhausted for a while. It should be recollected that at that time there was no legislative compulsion, but every young man was left to follow his inclination.

In connection with this experiment he might name that he (Mr. Brady) was, at the time alluded to, lecturing upon botany at the College of Medicine, as well as to the class of chemists' assistants. This double labour struck him as being wrong in principle, because it was a waste of power, and it was with this feeling that he approached the subject when the passing of the Pharmacy Act again brought up the question of local pharmaceutical education. The arrangements now made for the recognition of pharmacy by the University of Durham, and its affiliated College of Medicine at Newcastle, had been described. It was only due to acknowledge the very friendly way in which the subject had been treated by some influential members of the University, especially by the Rev. Canon Whitley, President of the College, Dr. Embleton, and Mr. Marreco. The experiment of making joint classes of medical and pharmaceutical students might, by some, be considered as one doubtful of success, but he looked upon it as a reasonable thing. Surely, in towns where classes for medical students already existed, those who practised medicine and those who practised pharmacy could mutually throw aside any jealousies, and avoid a great waste of brain-power by combined action. The intercourse which would take place between the two classes of students would lead to a better understanding between them.

Mr. **Atkins** expressed his admiration of the paper just read, and of its author's very meritorious exertions. He could offer personal testimony to the warm feelings of obligation felt by young men who had attended Mr. Schacht's class, as it happened that a former apprentice of his (Mr. Atkins's) had been one of this number; and after passing an excellent Minor examination, he had written stating how much his success was due to Mr. Schacht's kind teaching. All must agree that they had to contend with a great deficiency of educational means in the provinces. Again, the difficulty was greater in the smaller towns. In such places jealousy existed, and a fear lest young men, mixing together in classes, would not preserve that confidence about their employers' affairs which was needful. He had tried in Salisbury, setting a series of questions on paper, the subject being chemistry, and the treatment, much like that adopted by Roscoe. Botany would be more difficult to deal with in many towns, but doubtless there were many enthusiastic botanists up and down the country who would help to give instruction in their favourite science. As regarded the Government Schools of Science and Art, he believed that many other towns were in the position of Salisbury, where there was an excellent school of art, but none for teaching science. A great change had come over the class of young men within the last twenty years, and there was now amongst them a spirit of receptiveness for knowledge which did not then exist. Therefore we must recognize this great and widely-spread want of educational means, and it was a duty to try to find a practical remedy.

Mr. J. C. **Brough** wished to lay before the meeting one or two facts bearing upon this important question. He had had the opportunity recently of issuing a series of questions to students,* and he had found that receptiveness to which a previous speaker had referred. He was overwhelmed with answers. From twenty to thirty students regularly sent in answers, and some were so excellent that they improved upon his own replies. If other Universities would follow the example set by that of Durham in recognizing pharmacy, he thought much of the difficulty would be removed. The student who had most distinguished himself in answering the questions just referred to was a pharmaceutical student attending Professor Galloway's class in Dublin.

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* *Vide* 'Chemist and Druggist,' "Corner for Students," conducted by J. C. Brough, F.C.S.

Mr. REYNOLDS (Leeds) said that for some years to come this subject would have to be kept before them, and at present there were several of its bearings which had not been touched upon during the present discussion. The first appeared to be, how far could that body which now controlled pharmacy on behalf of the State, viz. the Pharmaceutical Society, promote education in the provinces? So far as London was concerned, he believed the want was fully met by the School of Pharmacy in Bloomsbury Square; but since that was only sufficient for a tithe of those who required education, there would still be the wants of the remainder, who must equally face an inexorable Board of Examiners. The experiment to be made at Newcastle-on-Tyne was of the deepest interest to them all, but he could not yet feel confidence to follow the example set them. As an ex-lecturer on chemistry in a provincial school of medicine, he did not think that the estimation of chemistry held by the medical student was very favourable for associating him with the pharmaceutical student, nor might such association be desirable on more general grounds. Viewing the action of the State with reference to science, they saw that it made grants for apparatus, payments for results to teachers, etc. Ought not the Pharmaceutical Society to do something of the same sort? Certainly it ought not to initiate provincial schools, for only those deserved help who first helped themselves. The provinces were, to say the least, the backbone of the Society; and he thought that provincial museums had a fair claim for aid from the parent Society.

Mr. SAVAGE (Brighton) explained the new regulations for the Preliminary Examination of the Pharmaceutical Society, showing that the new state of things consequent upon the Pharmacy Act required greater uniformity in the examinations than could be attained under the old system. He hoped that the Universities could help them to obtain the educational facilities which they required. The South Kensington classes in Brighton were confined to Art.

Mr. SCHACHT replied on the whole question. He commenced by referring to the difficulties named by Mr. Atkins, but he considered that Clifton and Bristol were not a favourable field for his experiment, because they were well supplied with Science classes. In smaller places there would not be these competing influences, and therefore he thought it ought to be easier to gather a class of from five to ten students. As to the teacher, he had tried to place himself on a level with the students as a fellow-student, and whilst giving them the best explanations in his power, he had taught them that it was the class-book which was instructing them. The number of medical schools in England seemed to him to be too few to influence the question very greatly, but he earnestly wished success to the exertions of Mr. Brady and their other friends in the north. His own experience, however, was completely against allying medical with pharmaceutical students, and it was based upon the fact that of five of his own pupils who had attended lectures on chemistry at the Bristol School of Medicine, not less than four had altered their original purpose, and becoming dissatisfied with pharmacy, had given it up. The association of medical with pharmaceutical students for the study of chemistry did not appear to him likely to assist the attentiveness of the latter.

CONTRIBUTIONS TO THE HISTORY OF BUXINE.

BY DR. FLÜCKIGER,

HON. MEMBER OF THE BRITISH PHARMACEUTICAL CONFERENCE.

(*Abstract of Author's paper in the* Neues Jahrbuch für Pharmacie, xxxi. (1869), 257, *with additional notes.*)

The *Pharmaceutical Journal and Transactions* for July of the present year, contains an interesting paper by Drs. Maclagan and Gamgee on the alkaloids discovered by them in the wood of the Bibiru-tree, *Neotandra Rodiei*, Schomburgk, to which I beg leave to add the following results of my examination of the hitherto so-called alkaloid *Bibirine*. The composition and properties of this body, as occurring in the bark of the tree in question, have been investigated by Maclagan, Tilley and Von Planta,[*] who assigned to it the formula $C_{19}H_{21}NO_3$. I have prepared bibirine in a state of purity by exhausting with ether the crude alkaloid. The latter I purchased of Mr. E. Merck, Darmstadt, who also sent me specimens of the bark, which I examined and found to be undoubtedly that of *Nectandra Rodiei.* The purified bibirine, as left after the evaporation of the ether, was dissolved in acetic acid, precipitated by potash, and repeatedly submitted to this treatment. A white amorphous powder was finally obtained,[†] the neutral acetate of which, shows the following behaviour. The concentrated watery solution is not precipitated by tartarated antimony, but affords abundant white precipitates on the addition of phosphate of sodium, nitrate, iodide, or iodohydrargyrate of potassium, perchloride of mercury, platino-cyanide of potassium, or of nitric or iodic acids. The acetate of bibirine, further yields yellow precipitates when mixed with solutions of red or yellow prussiate of potassium, chromate or bichromate of potassium, or bichloride of platinum. All these precipitates are amorphous, the platino-cyanic compound alone, becoming crystalline after some hours. The pure bibirine gave upon elementary analysis (performed in my laboratory by Dr. Kraushaar) the following percentage :—Carbon 71·61, Hydrogen 6·73. The platinum compound left behind 19·22 platinum.

There is another alkaloid, *pelosine,* the properties ascribed to which seemed to me to accord with those of bibirine; and having had occasion to investigate and analyse some of the drugs in which it resides, I have instituted a comparison between it and bibirine, the result of which I will now detail.

Pelosine was discovered in 1838 by Wiggers, and found by Bödeker (1849) to answer to the formula $C_{18}H_{21}NO_3$. It was first extracted from the roots and stems known in pharmacy as *Pareira Brava,* and commonly attributed to *Cissampelos Pareira* L., a climbing shrub of the Order *Menispermaceæ,* distributed throughout the tropical regions of the whole world. It has however been pointed out by my friend Daniel Hanbury in a note in the *Pharmacopœia of India,* that this derivation of Pareira Brava is entirely erroneous, and a comparison of authentic stems and roots of *Cissampelos Pareira* L. collected in Jamaica and presented to me by Mr. Hanbury, with the ordinary Pareira Brava of commerce, enables me to confirm his observation.

I begin then by stating that the materials which have afforded me pelosine are the stems and roots of *Cissampelos Pareira* L., and those of *Botryopsis platyphylla* Miers, the latter collected by Dr. Peckolt at Cantagallo in Brazil. The latter constitute an excellent sort of Pareira Brava used in Brazil, but not the ordinary Pareira Brava of the English shops, the origin of which drug is in fact, still uncertain. From the stems and roots both of the *Cissampelos* and *Botryopsis,* I have obtained pelosine in the following manner.

The wood was cut in pieces, and ground without employing considerable force. By this means, the softer tissue of the bark and the medullary rays were almost completely separated from the more resistant tough woody prosenchyme, the latter being very poor in alkaloid. The coarsely powdered parenchymatous part thus obtained, is then exhausted with water, to which a little acetic acid may be added. In this solution, caustic alkalies or their carbonates produce an abundant precipitate, which is dissolved by ether. In order to purify it, the precipitate may however be collected, washed, dried or not, and redissolved either in acids or ether. Another process may be founded on the solubility of pelosine in carbonic acid; on expelling this acid, the alkaloid is precipitated. By either of these methods, it can at last be obtained as a white amorphous powder; the yield, even of the bark only is very small, amounting to not more than half per cent, at best. Yet commercial Pareira Brava affords far less, or more commonly, none at all. This fact consequently shows that true Pareira derived from *Cissampelos Pareira*, ought to be introduced instead of the usual drug, which on account of its want of alkaloid is probably quite useless.

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[*] Gmelin's Chemistry xvii. 170.

[†] In small quantity,—probably not one quarter of the crude alkaloid. But the so-called *Sulphate of Bibirine,* of Macfarlane of Edinburgh, of which Mr. Hanbury provided me a sample, proved in fact to yield only *a very trifling amount* of pure bibirine, the sulphate containing so large a proportion of dark brown coloured matter that it caused the purification of bibirine to be extremely difficult, at least by the method above mentioned, which, however, I believe to be the best.

As to my pelosine, its reactions were in all points, the same as those of bibirine. Neither myself nor my assistant Dr. Kraushaar were able to trace any difference between the two. Pelosine yielded 72·09 per cent of Carbon, and 6·8 of Hydrogen. The platinum compound gave 19·13 of metal; the hydrochlorate 12·68 of hydrochloric acid. Its composition, therefore, agrees with that of bibirine, or perhaps Bödeker's formula* $C_{18}H_{21}NO_3$ is the more correct; it indeed requires 72·24 Carbon and 7·02 Hydrogen. It would be highly desirable to examine crystallized derivatives of the alkaloid, in order to ascertain whether $C_{18}H_{21}NO_3$ or $C_{19}H_{21}NO_3$ is the true expression of its constitution, but I tried in vain to obtain, for instance, a bromated compound, or any product of decomposition of the alkaloid, in a crystallized state.

To the above properties of pelosine (or bibirine) I may add its easy solubility in bisulphide of carbon, in which it is even more soluble than in ether. As to the latter, Wiggers had stated that the hydrate of pelosine does not dissolve in ether, a statement which I however cannot confirm, even after having examined a sample for which I am indebted to Prof. Wiggers himself. —Pelosine dissolved in four parts of acetone, deviates the ray of polarized light 1,5° to the right, when examined in a column of 25 millimetres.

Pelosine as met with in *Cissampelos* from Jamaica, is accompanied by a neutral principle, of which I obtained once only a small quantity in fine hexagonal scales. This body is insoluble in acids, at least when dilute, but crystallizes from an alcoholic solution. The crystals are colourless, but acquire when moistened with concentrated sulphuric acid, a magnificent blue colour, which quickly turns green and red and then disappears. I was unable to obtain any larger quantity of this remarkable body, which I would name *Deyamittin*,† in order that it may not escape in further investigations.

In 1860, Walz made some experiments on Buxine, the alkaloid of the leaves of *Buxus sempervirens*, and found it to be identical with bibirine. Walz precipitated the buxine by adding hydrochloric acid to a solution of the crude hydrochlorate of this alkaloid. I ascertained that in the same way bibirine (as well as pelosine) can be obtained, and consequently, feel assured, that Walz is correct in identifying buxine and bibirine, with which I now associate pelosine, though I am about to examine buxine itself.

In Bibiru bark, bibirine is accompanied by a dark yellow matter, containing another alkaloid, called *Sipirine* by Maclagan, who did not succeed in isolating it satisfactorily, nor have I been more successful. Pelosine, according to Bödeker, is easily converted into a yellow matter, which he named *Pellutein;* I think it more correct to say that such a body pre-exists in pareira. Finally, in *Buxus sempervirens*, Walz also met with a yellow substance named *Buxoflavin*. Let us hope that the investigations of Drs. Maclagan and Gamgee will throw light on these substances, which are perhaps all connected with one of the new bases pointed out by these chemists to exist in bibiru wood.

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* Gmelin's Chemistry xvii. 26.

† *Deyamitta*, being the Cyngalese name of *Cissampelos Pareira*.

Again, in 1845 Winckler discovered an amorphous alkaloid *Paricine* in a false Cinchona Bark, (China Jaen vel Pará fusca) which had been imported from Pará to London, and has been attributed by Howard (*Nueva Quinologia* ad vocem *Chinchona lutea*, p. 3) to *Cascarilla hexandra* Weddell. Winckler ascertained the presence of paricine also in the bark of *Chinchona lutea* Pavon,[*] the so-called *China Jaën pallida*, or according to Howard, *Yellow Bark of Chito and of Ynta* of Pavon's time. In 1852, Winckler stated that paricine is probably nothing else than bibirine, and the reactions of his alkaloid favour this opinion, which is also acknowledged by Howard.[†] Paricine also is accompanied by an intensely deep yellow matter,[‡] showing a perfect resemblance both to sipirin and buxoflavin.

In 1864, De Vrij came to the conclusion, that in most or in all Cinchona-barks, an amorphous alkaloid exists, probably the same as that which Sertürner obtained in 1829 in a very impure state, and described under the name of *Chinoidine*.[§] Yet even De Vrij did not succeed in completely purifying this alkaloid. From what he had already published on his chinoïdine, I was induced to regard it as identical both with paricine and bibirine.

Dr. de Vrij, however, whom I had the pleasure of seeing recently, objected that chinoidine is capable of decomposing the salts of ammonium. I now find that bibirine acts in exactly the same manner, and that crude bibirine or pelosine may be purified by treating it with chloride of ammonium, although this method of preparation does not seem to be advantageous. Having been favoured by Dr. de Vrij with a sample of his sulphate of chinoidine, a yellow amorphous powder, *not* melting at 212° F., I find that its aqueous solution shows the reactions of (impure) bibirine.

After all these statements, I believe it very probable that Bibirine, Pelosine, Buxine, Paricine, and Chinoidine are but one and the same alkaloid, which if I am correct, ought to bear the name of *Buxine*, which was applied by Fauré as early as 1830 to the alkaloid of *Buxus*.[||]

The name *Chinoidine*, I must observe was employed even at an earlier period, but it appears to be less convenient, as very different things have subsequently been confounded under this designation.

Further investigations are doubtless needed to prove the correctness of the opinion here expressed; but should it be confirmed, the wide distribution of the alkaloid will be a point of interest. The mother-plants mentioned in the foregoing inquiry indeed belong to the natural orders of *Lauraceæ*, *Menispermaceæ*, *Euphorbiaceæ*, and *Rubiaceæ*, and others may probably be added to them. At the request of Mr. Hanbury I examined in this respect *Pereirine*, an alkaloid discovered by Goos in 1839 in Pereira Bark, a febrifuge used in Brazil, and afforded by *Geissospermum Vellosii* Fr. Allem., a tree of the order *Apocyneæ*. Goos described it[**] as a yellowish white, or somewhat reddish amorphous powder, having when dissolved, an intensely bitter taste; the sample before me is of a rather dark brown colour and perfectly amorphous under the microscope. By exhausting it with bisulphide of carbon, and slowly evaporating, I obtained but a very trifling colourless residue, consisting of most brilliant prismatic and octahedral crystals, soluble in acids, but not in ether. They are consequently not buxine, but probably a new alkaloid. As the larger part of pereirine presented a close resemblance in colour and taste to berberine, I tried to obtain from it crystallized nitrates and hydrochlorates but without success. Pereirine appears therefore to be a peculiar base.

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[*] Figured in Howard's *Nueva Quinologia*, plate 14.

[†] *Nueva Quinologia*, microscop. observat. p. 9.

[‡] See Howard's *Nueva Quinologia*, ad voc. *Chinchona lutea* 3, and Micr. Observat. 9.

[§] The curious process for obtaining it, is given in the *Jahresbericht über die Fortschritte der Pharmacognosie, Pharmacie und Toxicologie* by Wiggers and Husemann, 1866, 276.

[||] *Journ. de Pharm.* xvi. 428.

[**] *Pharmaceutisches Centralblatt*, Leipzig, 1839. 615.; Berzelius' *Jahresbericht*, 1844, 372.; Gmelin, xvii. 317.

The **President** remarked that Dr. Flückiger was Director of the State Pharmacy at Bern, and the subject of his paper was one on which he was peculiarly well qualified to speak. It was an interesting fact that *Pareira Brava* contained an alkaloid which had been supposed to be exclusively yielded by bibiru bark. Again, it was remarkable that an alkaline nitrate should precipitate this alkaloid just as with emetine; and the behaviour of these two alkaloids under such circumstances was quite exceptional.

Mr. **Morson** (London) said that according to his experience the percentage of bibirine obtained from the wood of the greenheart-tree was very small.

ON TINCTURE OF ACETATE OF IRON.

BY MESSRS. J. DEANE AND T. JEFFERSON.

Tincture of acetate of iron is one of several preparations that occasion some trouble and annoyance to those engaged in the dispensing of medicines, partly from its instability, and partly from its being so rarely prescribed that, even if kept prepared, it will, at the time of its being required, most probably be found in a condition quite unfit for use. Although the process given in the British Pharmacopœia would seem to furnish a ready means of preparing it in small quantity at short notice, practically a considerable time and much waste of spirit of wine are involved in washing out the solution retained by the precipitated sulphate of potash. When freshly made the preparation is elegant enough in appearance, but, for the reasons above stated, some modification of the process seems desirable.

With the view of trying to overcome these difficulties, some experiments were undertaken to prepare a tincture which should keep without material change for a reasonable time, and which should be equally definite in composition with that prepared according to the formula given in the Pharmacopœia.

1st. For sake of comparison, samples were carefully prepared strictly in accordance with the B. P. directions, and placed under varying conditions, some being fully exposed to sunlight, and others kept in the shop under ordinary circumstances; but in all cases it was found that a change began to take place in about a month or five weeks, the liquid gradually becoming turbid, and depositing oxyacetate of iron, while at the same time the alcohol became partially converted into acetic ether by the action of the liberated acetic acid.

2nd. Thinking that possibly the presence of alcohol might expedite decomposition, an aqueous solution was prepared of the same strength, by dissolving freshly precipitated oxide of iron in an equivalent portion of acetic acid, and diluting to the proper bulk; but this experiment was not attended with any better success than the first, decomposition commencing in about the same time.

3rd. A concentrated solution was prepared, four times the strength of the tincture, so as to bear the same relation to it, that the liquor ferri perchloridi fortior does to the tinctura ferri perchloridi.

The formula adopted is as follows:—

Liq. Ferri Persulph. 2½ oz. (fluid).
Liq. Ammoniæ q. s.

The precipitated oxide of iron, after being thoroughly washed and pressed as dry as possible, is to be dissolved, without heat, in 520 grains, or, approximately, 9 fluid drachms, of glacial acetic acid, and the solution diluted with distilled water to 5 fluid ounces. One part of this, with three parts sp. vini rect., will represent the tinct. ferri acetatis, B. P. In this way a very elegant and convenient preparation may be obtained, which will keep for a considerable time, samples so prepared having been kept over twelve months without any change beyond the formation of a small quantity of a crystalline deposit, which, however, is entirely soluble on dilution with either sp. vini rect. or aq. destillata; the solution is, in fact, slightly supersaturated, but it was found that any attempt to make a more dilute solution, such as twice or thrice the strength of the tincture, interfered with its keeping properties.

Professor Attfield remarked that spirit was quite useless in this preparation, which might have been aqueous, just as liquor ferri perchloridi.

Mr. T. B. Groves, Mr. Brady, and the President, also added a few words.

NOTE ON THE PREVENTION OF ACCIDENTAL POISONING.

BY MR. G. BURRELL.

The lamentable cases of accidental poisoning recently recorded in the Pharmaceutical Journal, should stimulate the ingenuity of every member of the profession to guard against the possibility of such mistakes.

For it is obvious that such occurrences, if repeated, will likely end in some mischievous legislation, which, without securing the object aimed at, may subject us all to vexatious interference.

If a man do not see it to be his *interest* as well as duty to exercise every precaution, however troublesome, to ensure the safety of his customers, it is absurd to expect any legislative Act, however stringent, will compel him.

I would supplement the sensible remarks of Mr. Chipperfield and others, on shop arrangements, in last number of Pharmaceutical Journal, with a suggestion or two.

My first is, that all bottles containing the more deadly poisons in frequent or occasional use, should be enclosed in wooden or paper cases,—each carefully labelled, and having the maximum dose legibly written or painted on. The case might be painted green or red, or covered with paper of either colour, and all such potent substances should be kept in a press *not so accessible* as the other medicines we are continually handling.

My second suggestion is, that every bottle containing an energetic medicine, poisonous or non-poisonous, should have the maximum dose on it, and thereby unconsciously fix that important characteristic as indelibly on the minds of our young men, as the name of the medicine itself.

Mr. G. Cooper said that about two years since he and Mr. Dowling had patented a poison-bottle. Its peculiarity was in the surface being studded over with small projections. Professor Attfield had told him that the idea had been anticipated by an earlier patent. (Specimens of the bottles were placed upon the table.) He believed that the use of peculiar bottles for remedies intended for external use would prevent many mistakes.

Professor **Attfield** said that such bottles were introduced by Mr. Merrikin at the meeting of the Conference held in Bath in 1864.*

Mr. **Savage** had no faith in poison bottles, which were no substitute for care in using medicines. He recollected that the patients in a hospital were supplied with bottles of lotions and liniments having sand-paper affixed as a caution. They were found very convenient by the men in helping them to light their pipes!

Mr. **Stoddart** had known a nurse so careless as to pour out Sir William Burnett's solution instead of castor-oil, without discovering her mistake, and all precaution was hopeless against such a case as that. He used a distinct orange-coloured label for medicines for external use.

Mr. **Guyer** (Torquay) said that one of his standing rules was, not to allow a powerful poison to be dispensed but in the presence of a second person, and this system had worked well in his experience.

Mr. **Balkwill** stated the practice of his firm in order to prevent error in dispensing. The stoppers of bottles containing poisons were tied over, and their labels were round, instead of being of the ordinary form.

NOTE ON CHLORAL.

The President (Mr. Hanbury) drew the attention of the meeting to a specimen of Hydrate of Chloral received from Berlin, where it has been introduced as a remedial agent by Dr. Oscar Liebreich. Chloral in an anhydrous state is a heavy, volatile, colourless liquid produced by the action of chlorine upon alcohol and having the composition C_2Cl_3OH. If this body is brought into contact with a small proportion of water, the two combine and a solid crystalline hydrate is the result. This substance is extremely soluble in water, affording when pure a neutral solution which is unacted on by nitrate of silver or by acids, but which is immediately decomposed by a caustic alkali, chloroform being set free. This property suggested to Liebreich the idea of employing it therapeutically. He conceived that if it were brought into contact with the blood, chloroform would be evolved in a gradual manner, and anæsthesia, less transient than that obtained by inhalation of chloroform, would be produced.

It was, in fact, found by experiment that hydrate of chloral administered to rabbits produced profound sleep, and similar results followed its administration to human beings. The first case in which man was the subject, was that of a lunatic to whom a dose 1·35 grammes of the hydrate was injected subcutaneously, the effect produced being a sleep of five hours' duration. An internal dose of 3·5 grammes given in a wineglassful of water, was followed by sleep which lasted for the rather alarming period of sixteen hours. The ordinary dose recommended by Dr. Liebreich, as an hypnotic, is 2·5 grammes, about 38 grains.

[During the meeting of the British Association at Exeter, the subject of Chloral was brought before the Biological Section by Dr. B. W. Richardson, F.R.S., from whose report, as given in the *Medical Times and Gazette*, Sept. 4, we abstract the following additional particulars.]

In his experiments, Dr. R. employed a solution of hydrate of chloral made by dissolving 30 grains in 40 grains of water: this gives one fluid drachm of a saturated solution which is very convenient for use.

Dr. R. next proceeded to ascertain whether when the hydrate is added to fresh blood, chloroform is liberated: experiment proved such to be the fact, the odour of chloroform being very distinct and chloroform itself distilling over when the mixture was heated in a retort.

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* Pharm. Journ. N.S. Vol. VI. p. 161. Proceedings of Brit. Pharm. Conf.: Report of Committee on the Prevention of Accidental Poisoning. "Merrikin's Caution Bottle."

The narcotic power of the hydrate was tried upon rabbits, pigeons and frogs, the standard solution before-named being administered by the mouth or by hypodermic injection, either of which methods appeared effective. The general results were in the main confirmatory of those mentioned by Liebreich. The full dose of 2½ grains administered to a pigeon occasioned drowsiness in a few minutes, and deep sleep with entire insensibility in twenty minutes. Before sleep was produced there was in every case vomiting, whether the dose was large or small. As sleep and insensibility came on, there was always a fall in the temperature of the body, and the respirations declined in number per minute. From the full dose that could be borne by a pigeon, the sleep which followed lasted from 3½ to 4 hours, and 6 hours at least were required for perfect recovery. During the stages of narcotism, the evolution of chloroform by the breath was distinctly manifest. In an excessive dose, hydrate of chloral causes death.—Dr. Richardson's observations are summarized thus:

Hydrate of chloral, administered by the mouth or by hypodermic injection, produces, as Liebreich states, prolonged sleep.

The sleep it induces, as Liebreich also shows, is not preceded by the stage of excitement so well known when chloroform is administered by inhalation.

The narcotic condition is due to the chloroform liberated from the hydrate in the organism, and all the narcotic effects are identical with those caused by chloroform.

In birds the hydrate produces vomiting in the same manner, and to as full a degree, as does chloroform itself.

The sleep produced by hydrate of chloral is prolonged, and during the sleep there is a period of perfect anæsthesia; but this stage is comparatively of short duration.

The action of the hydrate is (as Liebreich assumes) first on the volitional centres of the cerebrum; next, on the cord; and, lastly, on the heart.

As to the practical application of hydrate of chloral Dr. R. remarked that whether it would replace opium and the other narcotics, is a point on which he was not prepared to speak. It is not probable it will supersede the volatile anæsthetics for the purpose of removing pain during the performance of surgical operations, but it might be employed to obtain and keep up sleep in cases of painful disease. This research had, however, led to the fact that chloroform, when injected subcutaneously in an efficient dose, leads to as perfect and as prolonged a narcotism as the hydrate, with an absence of other symptoms caused by the hydrate, which are unfavourable to its action. This was a new truth in regard to chloroform, and might place it favourably by the side of the hydrate for hypodermic use. Lastly, as the hydrate acts by causing a decomposition of the blood,—*i. e.*, by undergoing decomposition itself and seizing the natural alkali of the blood, it adds to the blood formiate of sodium. How far this is useful or injurious remains to be discovered. But while putting these views as to practical application at once and fairly forward, Dr. Richardson said it was due to Liebreich to add that his (Liebreich's) theory and his experiments have done fine service in a physiological point of view. They have shown in one decisive instance that a given chemical substance is decomposed in the living body by virtue of pure chemical change, and that the symptoms produced are caused by one of the products of that decomposition. The knowledge thus definitively obtained admits of being applied over and over again in the course of therapeutical inquiry.

Mr. **Morson** said that the most remarkable thing in connection with chloral appeared to be, that by regulating the dose a person could be put to sleep for a definite number of hours.

Mr. **Palk** thought that differences of constitution and temperament would upset such calculations to a great extent.

ON EXCIPIENTS FOR PILLS.

BY MR. W. D. SAVAGE.

Mr. Arnold Cooley, in his work on pill-making, concludes the introduction with this very apposite sentence, "Honour and good faith toward the customer, or patient, will not permit defects in the consistence or plasticity of a pill-mass to be remedied by additions unauthorized by the prescription, as is unfortunately too often done by careless, inexperienced, and unscrupulous manipulators." Whilst I entirely concur in the *principle* enunciated by Mr. Cooley, there are cases in practice which not only justify but actually require an addition before the author's wishes can be complied with, and pills made,—this too, without detracting in the slightest degree from the efficacy of the remedy prescribed; take for illustration the following recipe, which first suggested to Mr. Hornsby the necessity of an addition :—

℞ Creasoti . . . . ♏xxiv
Pil. Sapon. Co. . . ʒss
M. into Pil. xij.

If your pil. sapon. co. be fresh, you will find this to be an unmanageable mass; add to it liquorice powder, and you have, with only ♏j of creasote, 7 gr. pills (A); with decorticated liquorice you will require one grain more for each pill (B); with the ♏iij of creasote, you have with powdered gum tragacanth and wax very large pills (C); with calcined magnesia and also with calcined magnesia and powdered soap, you have some nice-looking pills (D and E), heavy, but not bulky; they have, however, the disadvantage of being insoluble in *boiling* water: ♏iij of creasote and 5 grains of pil. sapon. co. absorbed so much liquorice that, divided into two pills, each weighed 7½ grains (F). Powdered Castile soap with the relative proportion of opium was tried (G), but with little advantage; creasote and powdered opium without soap, but with liquorice powder, made more convenient pills (H), but still objectionable; and white and yellow wax were tried,—the latter being more plastic is preferable and makes very good pills; therefore if it is necessary to give creasote in pills at all, why adopt the objectionable plan of ordering, as is usual, pil. sapon. co. with it, when an equivalent quantity of opium with wax will produce a pill holding two minims of creasote not so large as an ordinary 5-grain pill, possessing the advantage of *retaining* the oil, without increasing in size by re-absorbing powder (J)? Another form without opium is (K); with half a grain more wax in each pill is (L). In order to test Mr. Hornsby's results I made several lots of pills with some *old* pil. sapon. co., and using the drop instead of the minim measure for the oils, and whilst the pills are much smaller than his, the advantage of wax over soap is most manifest. No. 1, plain and silvered, compared with No. 2 or 3 is obviously in favour of the former, so that although wax is superior to soap as an excipient with oil, we have no right to use it when soap is ordered, unless by permission of the prescriber. At the same time it is well that any suggestion of practical utility should be brought before the trade, and by them to the profession, and I know of no means better than this Conference to effect the object. The convenience of administering creasote in pills is but a small matter. The *general* application of wax as an excipient is further illustrated in specimens of croton oil pills, as Nos. 4 and 5, and again in combining ol. menth. pip. or other oils in such masses as ferri sulph. and pil. galban. co. (M). In making ext. colchic. acet. and ext. cannabis into pills (when permitted), pulv. tragac. is a most convenient excipient, a good plastic mass is formed, and pills thus made retain their shape a long time (No. 6). With respect to calomel pills, I have found manna the best medium for making them, as specimen No. 7. The pil. ferri iodid. of the B. P. will not keep long unchanged; but by a slightly modified process, containing the same quantity of iodide of iron, they may be made to keep any length of time unchanged, as evidenced by the sample in the tin box made two years ago. Mr. H. has not revealed the means by which *he* has effected this object, but I know the same may be accomplished by coating the pills with tolu.

A.
℞ Creasoti ♏j
Pil. Sapon. Co. gr. iiss
Pulv. Glycyrrh. gr. ij. M.
Six weigh 36 grains.

B.
℞ Creasoti ♏j
Pil. Sapon. Co. gr. iiss
Pulv. Glycyrrh. decort. q. s.
Six pills weigh 42 grains.

C.
℞ Creasoti ♏iij
Pulv. Tragac. gr. j
Ceræ Alb. gr. iij. M.

D.
℞ Creasoti ♏xxiv
Magn. Calc. q. s. M.
Into 12 pills (68 grains).

E.
℞ Creasoti ♏xxiv
Pulv. Sapon. gr. xij
Magn. Calc. q. s. M.
12 pills.

F.
℞ Creasoti ♏[illegible].
Pil. Sapon. Co. gr. v. M.

G.
℞ Creasoti ♏xxiv
Pulv. Opii gr. xij
Pulv. Sapon. gr. xxiv
Pulv. Glycyrrh. decort. q. s.
Ft. Pil. xij; weighs ʒij gr. xxiv.

H.
℞ Creasoti ♏xxiv
Pulv. Opii gr. xij
Pulv. Glycyrrh. decort. q. s.
Ft. Pil. xij; weighs 84 grains.

I.
℞ Creasoti ♏ij.
Pulv. Opii gr. j
Ft. Pil. c. Cera q. s.

K.
℞ Creasoti ♏xxiv
Ceræ Flavæ gr. xxiv
Pulv. Glycyrrh. gr. xij. M.
Into 12 pills.

L.
℞ Creasoti ♏xxiv
Ceræ Flavæ ʒss. M.
12 pills.

M.
℞ Ferri Sulph. gr. j
Pil. Galban. Co. gr. iiss
Ol. Menth. Pip. ♏j
Ceræ Flavæ gr. j. M. Pil.

No. 1.
℞ Creasoti gtt. xxiv
Ceræ Flavæ gr. xxiv. M.
12 pills.

No. 2.
℞ Creasoti gtt. xxiv
Pil. Sapon. Co. (*old*) gr. xxiv. M.
12 pills.

No. 3.
℞ Creasoti gtt. xxiv
Pil. Sapon. Cast. gr. xij
Pulv. Glycyrrh. gr. xij. M.
12 pills.

No. 4.
℞ Ol. Croton. gtt. j.
Pil. Sapon. Co. gr. ij. M.

No. 5.
℞ Ol. Croton. gtt. j
Pulv. Opii ¼gr.
Ceræ Flavæ gr. ij. M. Pil.

No. 6.
℞ Ext. Colch. Acet. gr. j
Pulv. Tragac. gr. j. M. Pil.

No. 7.
℞ Hydr. Chlor. gr. iij
Mannæ gr. j. M. S. A.

Mr. **Knapman** (Exeter) said that it appeared to him that the objection to magnesia would also apply to wax, since this would not be fusible at the temperature of the body. He had not found creasote difficult to make into pills.

Mr. T. B. **Groves** suggested that the most convenient and elegant way of administering creasote would be in small gelatine capsules (*perles*), in which ether, chloroform, etc., were administered in France.

The **President** said that there were objections to introducing, in the undiluted state, a remedy so actively caustic as creasote, and provision should be made to combine the remedy with some inert and bland excipient. The objection which he had spoken of against the use of a too concentrated remedy, applied to other cases such as "compressed bicarbonates of soda and potash."

Mr. **Savage** said that one grain of wax was sufficient to combine with one minim of creasote, whilst it required five grains of magnesia to effect a similar object. Yellow wax was better than white wax.

HISTORICAL NOTICES OF CHEMISTS AND DRUGGISTS.

BY MR. W. D. SAVAGE.

The early history of chemists and druggists is so interwoven with the practice of the apothecary and medical practitioner, that to convey anything like a correct notion of our own commencement and progress, must necessarily involve their history too; and whilst it is not my intention to give either an elaborate history of dry statistical facts on the one hand, neither can I omit on the other to trace as briefly as possible the strange history of our early friends. The barber-surgeons, the apothecary-grocers, the apothecaries, surgeons, and physicians, all of whom have had something to do with our parentage. I have purposely avoided any history or reference to chemistry, thinking that materials may be gathered at some future time for a pleasing record of the early struggles of the chemist's efforts to obtain the philosopher's stone, and his subsequent success (if not in obtaining this panacea), at least, the acquisition of some valuable knowledge. In the paper which I am about to submit to you I claim no merit, it is simply an arrangement of facts, which I shall endeavour to group together, perhaps not in consecutive order, but in such form as I hope will not be altogether uninteresting; and when we have reviewed the proceedings of those who have gone before, and who have had to bear the burden and heat of the day, let us ask ourselves this very pertinent question, *Have we progressed?*

I have said that in considering the earliest records of the apothecary, I am giving our own history, for it is quite evident that our distinctive recognition as "Chemists and Druggists" is comparatively modern, and necessarily arose from the creation of physicians, and the petty jealousies arising from rival practice. The earliest record of the apothecary seems to be one Richard Fitznigel, who was apothecary to Henry II.; but little is known of him beyond the fact that he was subsequently Bishop of London. Again, it is said one Coursus de Gangland for his services as apothecary to Edward III. (1345), for taking care of and attending his Majesty during his illness in Scotland, was rewarded with the munificent pension of 6*d*. per day. In 1511 (Henry VIII.) there was an Act of Parliament for regulating the admission of persons practising physic and surgery, but no mention is made of the apothecary, from which we may infer that they were not well known as a class until 1543 (Henry VIII.), when a curious Act was passed, whereby the ignorance and cupidity of the London surgeons is to be remedied by the irregular practitioners being tolerated and protected under the distinctive name of apothecaries; and the reasons assigned for this Act are that the surgeons have *sued*, *troubled*, and vexed divers persons, as well as *men* as *women*, whom God had endued with a knowledge of the nature, kind, and operation of certain herbs, roots, and waters, and the using and ministering of them to such as has been pained and customable diseases,—as women's breasts being sore, a pin and the web in the eye, uncomes of hands, burnings, scaldings, etc.; the cure of these strange maladies were effected, the Act says, on poor people for neighbourhood and God's sake, and of pity and charity, and therefore it proceeds to ordain that henceforth it shall be lawful to every person, being the King's subject, having knowledge of these said herbs, roots, etc., by speculation or practice, in England or within the King's dominions, to practise, use and minister, etc.; however, it would seem that these irregular practitioners had to confine their skill to outward applications, such as ointments, poultices, and plasters.

I shall now call your attention to what appears the first Pharmacopœia. In May 1618 (two hundred and forty-three years ago) the College of Physicians issued for the first time a Pharmacopœia of their own, to be distributed amongst the apothecaries; but we are told that it was so imperfect that they were obliged to recall it, and issue an improved edition in December of the same year; and this, like the subsequent Pharmacopœias, was published in Latin, and it was by our old and quaint friend Culpepper, the herbalist, translating it into English that he incurred the censure and reprobation of his professional brethren to such an extent, that although qualified by education (which he had obtained at Cambridge University), he was refused a licence to practise. It is interesting and amusing to read how strangely Culpepper read the Materia Medica; how he arranged his "Astrological judgment of Diseases;" how he adhered to the doctrine of signatures, in the one case, attributing peculiar virtues to herbs gathered under certain planetary conditions, and in the other, inferring that every plant carried with it the marked impress of its own use. Thus he says:—

> "Because out of thy thoughts God shall not pass;
> His image stamped, is on every grass."

And I cannot help thinking that this same practice at least is not even now extinct,—we have saffron for measles, turmeric for jaundice, nettles for nettle-rash, and so on; it is true this is not *professionally* recognized, at the same time it shows how tenaciously we adhere to some relics of a bygone age.

The exclusive method adopted by the College, whereby Culpepper and others were not recognized, induced them to adopt evasive measures, such as to use medicines prescribed in similar cases by the properly qualified. To us this seems strange; but it must have prevailed to some considerable extent, for we find the next effort made to prevent irregular practice is to have nostrums, which Gray says could only be obtained at their own houses, or that of a confidential apothecary. Who can wonder, then, at the spread of specifics, and that every succeeding age has improved on its predecessor, till at last we seem to have reached the apex of puffing,—from Morison and Holloway to medicated paper for the watercloset? However, to recur back to my subject, a decision of the House of Lords enabled the unrecognized practitioner to rely on his own skill, and not to adopt the prescription of another; this blow to the exclusive induced them to open their college to such as would voluntarily present themselves for examination in any branch of physic, and to license them for whatever department they were found qualified for; and thus it has always been that the greatest amount of liberty, compatible with the public interests, succeeds best.

The early association of the apothecaries with grocers is a curious feature in our history,—they were incorporated by James I., in April, 1606; but the alliance does not seem to have worked well, for, in December, 1617, or eleven years after, they were disunited, and the Apothecaries' Company was formed, with the designation of "The Master, Wardens, and Society of the Art and Mystery of Apothecaries of the City of London;" and it is by this charter they still exist, but with considerably diminished powers. It is curious to observe the dissatisfaction of the grocers after their separation, for, in the year 1624, a petition was presented to King James by them, wherein they complain that notwithstanding they are by far the largest body, the apothecaries have appropriated to themselves the "whole buying and selling of all drugs, and the whole distillation and selling of all waters within the said city (of London) and seven miles thereabout; this they say is against the law and to the impoverishing of many persons and their families, and they implore his Majesty to declare 'the letters patent' to be void, and not hereafter to be put in execution." However, the King disregarded their petition, and, in his reply, says, I *myself* did devise the corporation, and *do allow it;* that the grocers are only merchants and unskilled, whilst the apothecaries possessing the requisite knowledge, *I think it fitting* that they should be a corporation of themselves.

The quarrels betwixt the grocers and apothecaries resulted, in 1639, in a further subdivision of labour; the spirituous liquors and cordial compounds, which had been represented as distilled waters, were no longer to be made either by the apothecary or grocer, but by a separate company, and this seems the first establishment of "distillers" or "vintners." I may incidentally mention a curious combination that existed as far back as Edward IV., 1461, up to George II., betwixt the barbers and surgeons, so that for upwards of two hundred years this seemingly ungenial alliance continued, when it was discovered that the business or trade of a barber was "foreign to and independent of the practice of surgery;" so says the Act of Parliament, and henceforth the barbers were not to practise surgery further than drawing of teeth; and the surgeons were strictly prohibited from exercising "the feat or craft of barbery or shaving;" and, furthermore, they were required to have an open sign on the street side, whereby the king's liege people passing might know whither to resort in case of need. This publicity is still given by the barbers, but in most cases, I apprehend, without their knowing that the Pole displays the painted spiral emblem of the bandage used in Phlebotomy.

The Apothecaries' Company, consisting as it did of a joint stock company, soon began to usurp power; and we find they memorialized the Lord High Admiral, by representing the defective manner and bad drugs supplied by the London chemists to the naval surgeons. The result was an order, dated June, 1703, requiring all surgeons belonging to the navy to have their chests furnished at the common hall of the Company of Apothecaries, on condition that they should be *good* and *cheap*; they then made a further effort to supply the E. I. Co., and they obtained an order to do so, but it was to be subject to the approval of a competent committee, who had called in to their aid two eminent wholesale apothecaries, and they jointly expressed dissatisfaction with the quantity and price. Upon this rebuff the Company felt sore, and endeavoured to retaliate on the apothecaries by condemning some of their chests, but in this they failed; however, nothing daunted, they visited the shop of one of them (Mr. Lawrence) during his absence, and took samples of his goods for examination at the Hall (a privilege they obtained in 1722 and expired seven years after). Mr. Lawrence foreseeing the result, got some of his friends to go to the shops of the managers of the Company and purchase similar articles to those which they had taken from him; so, that when summoned, he pleaded that the articles taken were not finished making, but that he brought some with him which he would stand by; these they also condemned, when having his witnesses ready, he called them in to prove that they were purchased from their own shops. This evidence was too strong for them, and they gladly made the matter up. Several cases of arbitrary conduct have been recorded against the Apothecaries' Company, and they do not seem to have been very scrupulous as to the means of accomplishing their object; for instance, they were anxious to supply the royal household, but they were superseded by a Mr. Malthus, and, in consequence, they visited his shop and condemned his medicines. Again, a Mr. Goodwin, who was a wholesale apothecary and manufacturing chemist, supplied the Royal African Company with medicines for their forts, after much opposition from the Apothecaries' Company; and Dr. Shadwell, one of Goodwin's customers, having repeatedly put off paying his account (by no means an uncommon event of some of our professional brethren), the clerk who called lost his temper, and the doctor in turn threatened retaliation; accordingly, on the 10th June, 1727, the visitors came to Goodwin's shop, at Charing Cross, during his absence on 'Change, and burnt many of his articles in the street, and told a person who came to buy ol. anisi that it was not good, nor anything in the shop; and, to justify their proceedings, they carried off some emp. meliloti which had been two or three years in Africa, and had come back in a chest brought to be refilled.

Not satisfied with this flagrant usurpation of power, they went to another shop of his in Charles Street, Westminster, and condemned the goods there, taking away a chest of articles to be examined. Mr. Goodwin could not sit down quietly under such treatment, and appealed to the law, and it is said he recovered £600 damages.

Other cases of a similar character occurred, but I think it is unnecessary that I should adduce more to show the state of thraldom in which the druggists of that day suffered. Besides these efforts the privileged Company resorted to print, and they circulated a pamphlet entitled, 'Fraud Detected in Drugs;' however, they were ably answered by a pamphlet, 'Monopoly made a Property; or, the Navy Surgeon's Memorial to the Managing Apothecaries in Black Friars. 1708.'

2. 'The Case of James Goodwin, Chemist and Apothecary. 1727.'

It would seem that prior to this the apothecaries had begun to prescribe as well as dispense medicines. This encroachment was strongly resisted by the College of Physicians, who, by way of retaliation, opened a dispensary in Warwick Lane, for the sale of medicines to the poor at prime cost. It is said that a paper controversy of great animation arose out of this measure, but the tracts then issued on both sides are forgotten, with the exception of Garth's burlesque epic poem, entitled 'The Dispensary,' first published in 1697,—a curious copy of this work I happen to have by me. From this point, it appears, the custom of combining the druggist and the practitioner commenced, for although their position was somewhat equivocal for some time, they managed to make it good. The 'Spectator,' no. 195, says, "The apothecary is perpetually employed in countermining the cook and the vintner, showing thereby his recognition." Pope, again, in his 'Essay on Criticism,' illustrative of the domination of the critic over the poet, says,—

"So modern 'pothecaries, taught the art
By doctor's bills to play the doctor's part,
Bold in the practice of mistaken rules,
Prescribe, apply, and call their masters fools."

The apothecary was justified in practising at the time, from the miserable state of the sick poor; and so long as he confined his practice to this class there was not much complaint, especially as the bishops had the privilege of licensing persons to practise within their dioceses.

Of course this and every effort of a similar character has advocates as well as detractors.

I am now about to narrate an important series of events in connection with our individual existence as Chemists and Druggists; for although very early mention is made of "the chemist," and under this name he was unquestionably known as the druggist, still the joint appellation was not used in the public records till the Apothecaries' Company found it desirable to apply, as they did in 1812, for a Bill "To regulate the practice of Apothecaries, Surgeon-apothecaries, Midwives, and Chemists (Dispensing Druggist), and Druggists." In reference to the early date of our recognition, a tract, printed on a single folio sheet at the 'Star' in Bow Lane, in 1683, entitled 'A Plea *for the Chemists or non-Collegiates*,' by one Nat. Merry, defends himself and other chemists, and contends that they ought to *administer medicines* in defiance of the apothecaries, who might be considered as the druggists just then begun to practise.

Amongst other causes which the Company of Apothecaries asserted as contributing to the degradation of the profession, is mentioned the intrusion of pretenders of every description. "Even chemists, it is said, and their hired assistants visit and administer to the sick; their shops are accommodated with private surgeries; and as an additional proof of their presumption, evidences are adduced where they gave opinions on questions of forensic medicine of the highest and most serious import."

Some additional powers were granted, but, as I said before, the great struggle for supremacy commenced in 1812, and was finally consummated in 1815. Meanwhile several concessions and modifications were necessary. The College of Physicians, the College of Surgeons, the dispensing druggists, and the midwives, felt the importance of guarding their vested rights. The Colleges of Physicians and Surgeons had not much difficulty in arranging their differences with the Company, provided they could be permitted to divide the spoil, and shut out by ignoring the claims of the druggists and midwives; indeed it became a matter of joint interest to accomplish this object. However, notwithstanding great efforts, by promising Government additional duties on apprenticeship deeds, etc., the druggists, with the aid of public opinion, were enabled to get exemption, in the words of the clause, "Not to prejudice, or in any way affect the trade or business of a Chemist and Druggist, in the buying, preparing, compounding, dispensing, and vending drugs, medicines, and medical compounds, wholesale and retail; but all persons using and exercising the same trade or business, shall and may use, exercise, and carry on the same trade and business in such manner as fully and amply to all intents and purposes as the same trade or business was used, exercised, or carried on by Chemists and Druggists before the passing of this Act." I have given this clause *in extenso*, for it is, and has been, the sheet-anchor of our trade, and has served us in many subsequent troubles. The apothecaries recognized all those who were in practice on the 1st of August, 1815; and instead of being a mere trading society, confined to the inhabitants of London and seven miles round, from this date their professional character was fully acknowledged, and their examinations extended to the whole of England and Wales,—Ireland having a previous and special Act obtained in 1791, wherein it was enacted that "no person shall *open shop* or act in the art or mystery of an apothecary, within the kingdom of Ireland, until such person shall have been examined as to his qualification and knowledge of the *business*," etc., so that the Apothecaries' Company of Ireland had a complete monopoly in the vending and compounding of medicines, whilst in Scotland there has been no class analogous to our apothecaries.

The Apothecaries Act, we are told, dissatisfied its promoters, by not doing enough, *i. e.* it was restricted to those who "practise as apothecaries," and as it left us, the Chemists and Druggists, free with the farriers, cuppers, dentists, and others, to do much the same as before the passing of the Act, we can very readily imagine that all who had been striving to limit the power of the druggist felt disappointed at the result,—much of the same kind of disappointment was experienced by the Chemists and Druggists who were anxious for restrictive powers when the Pharmaceutical Society obtained their Act of incorporation; but a review of our own position in connection with the Act of 1815, should teach us a lesson not to be too exacting, but rather to rely on individual exertion and voluntary efforts than upon Acts of Parliament. Illustrative of this, we find that it took one hundred and fifty years to determine what was meant "*to practise physic;*" indeed the Court of King's Bench went so far as to give verdicts, at the instance of the College of Physicians, against persons for selling articles accompanied with a printed description of their virtues, and it was only by taking a more determined stand, as in the case of *King* v. *Rose*, when the House of Lords decided the matter in favour of the sellers of medicines, that this question was finally settled.

We have had at various periods since the passing of the Apothecaries Act to contend for our rights, but until the organization of the Pharmaceutical Society, it was matter of individual responsibility and defence; and if the Pharmaceutical Society had done no other good than this, the thanks of every member is due to the late much-respected Jacob Bell, and those who co-operated with him in the formation of a Society that should relieve individuals from the very onerous and expensive process of protecting their common rights. We are told, like the apothecaries (from whom we seceded), that our Act of Parliament, like theirs, did not go far enough, that the grocers, oilmen, and others, should not be allowed to deal in drugs; to a certain extent this complaint at the time seemed to be well founded. When the subject is fairly considered, there are many difficulties and, it might be in some cases, great hardships; for instance, in a village, whose population is large enough to support a general dealer, usually denominated a grocer, but who has, for the purpose of obtaining a living, to combine groceries, earthenware, stationery, oilman, and druggist,—in such a case it is quite evident that drugs alone would not do; then arises the difficult question, are the inhabitants to be compelled to go some six or seven miles to the nearest druggist when they want some salts or senna or other equally simple remedy?

The value of a Pharmaceutical Chemist will, when thoroughly understood by the public, be estimated at its proper value, and will be more effective in securing confidence and ensuring business than would any prohibitive measure against grocers and others selling drugs. Some may be disposed to say, but you who have lived a few years longer than us, claim an equal right to the title, without having to undergo the same ordeal. This is all very right, but then to such I would reply. There must be a beginning,—that Acts of Parliament are never retrospective,—indeed it would be very unfair to the man who had possibly earned the confidence of the public by a long life of practical usefulness to be called upon to go to school again; I say such a course would be unreasonable, impracticable, and subversive of individual and public rights; and if the public cannot always judge betwixt the M. P. S. by examination and those who have not, they have at least *primâ facie* evidence what one lacks in educational status he has a counterpoise in experience; it then behoves every one who is entitled to use the emblems of his connection with the Society in Bloomsbury Square, to do so, in order that the public may observe and recognize it.

At various periods of our history disjointed efforts have been made to associate the Chemists and Druggists in some combined form; but until our much-lamented friend, Mr. Jacob Bell, undertook the matter in 1840–41, little was done towards a regular organization. When the 'Pharmaceutical Transactions' appeared and met with so much encouragement, it was determined to establish the Journal and the Society,—the former to record more fully the proceedings of the latter,—and Mr. Bell, in speaking of the constitution of the Society, said, the ultimate objects contemplated are "The union of the Chemists and Druggists of Great Britain into one ostensible recognized and independent body, the protection of their general interests, and the advancement of the art and science of pharmacy," and for this purpose to establish a school of pharmacy, etc. etc. This was done, and all then in business were allowed to join the Society, with the distinction of founders. It was thought desirable at first to show what could be done without any legislative enactment, but at the expiration of five years it was thought the time had arrived when some Parliamentary measure might be obtained. In 1843 an Act of Incorporation was obtained, and a Bill was drawn up containing compulsory clauses, so that all who failed to register themselves within one year of its passing should be subject to the same pains and penalties as those commencing without the Society's diploma. This, however, was obliged to be omitted in the Bill, which was ultimately passed in June, 1852, allowing those who had commenced in the meantime, and up to May, 1853, to become members, and of this privilege about 1200 availed themselves, but as they were admitted under the sanction of a bye-law of the Society, Mr. Dickinson, a member, disputed the legality of the Council's proceedings, and carried his opposition to the Court of Queen's Bench, and afterwards to the Court of Exchequer; however, he was unsuccessful, and the Society has been examining and granting diplomas successfully ever since, and not until this year was it contemplated to again relax the law; to which, however, I have already adverted.

The question has been asked in the Journal, Have we progressed? And the querist answers by pointing to the fact of the Society having a *public* recognition in compiling the new Pharmacopœia, and by the Government otherwise acknowledging the Members and Associates of the Society in their appointments of Medical Dispensers. These are certainly evidences of progress; but we must aim at more than this,—we must indoctrinate the public, and endeavour, by our example, to make the youth under our care feel the necessity of a *practical* knowledge. It is sometimes said, and I have seen it advertised, that Assistants, Associates of the Society, are objected to. This would seem to indicate some defect in the mode of examination. But whilst I cannot admit that an exceptional case should be taken as a rule, I am not quite certain that too much prominence is not given to the theory of our profession over the cheese-and-bread department; and I have heard it said, since it has been my privilege to have a seat at the Council, that the Journal does not sufficiently represent the trade department, and as this has been urged upon the Editors, I am sanguine that some improvement will take place in this particular. On the whole, considering that we are now recognized in high places; that the Assistants, as a rule, are more in demand and better paid for their services than formerly, therefore, I think, the review will justify the conclusion that we are "progressing."

This paper was written some time ago, and before the important alterations that have made compulsory examinations imperative. The provisions of the recent Act of Parliament are so well known, it is unnecessary further to allude to them here.

The President asked Mr. Savage if the right to visit chemists' shops, exercised by the Society of Apothecaries, was the same thing as was claimed by the College of Physicians.

Mr. Savage replied that they were quite distinct.

The President remarked that the College of Physicians used to have the right of visitation within the City of London, and exercised it down to a recent period. There had been two or three visitations to his place of business within his recollection. On one occasion the censors were armed with hydrometers, and proceeded to take the specific gravities of certain spirits. Since the establishment of the General Medical Council, the custom had lapsed.

Mr. Cooper recollected that when he was a young man, residing in a place of business in Fleet Street, London, the censors made a visitation. They expressed approval of the drugs inspected, and then went to the shop of a neighbouring surgeon, who drew his supplies from the same source, but was less fortunate, as the censors condemned them.

RARE ESSENTIAL OILS.

The President (Mr. Hanbury) exhibited to the meeting authentic specimens of the following, viz.

Essential Oil of Canella alba.
„ Clove Bark or Culitlawang.
„ Chian Turpentine.
„ the leaves of *Pinus sylvestris.*
„ „ „ *Pumilio.*
„ the cones of *Abies pectinata.*
„ *Ptychotis Ajowan.*
„ *Origanum vulgare.*
„ Mexican Lignaloë.

With regard to that obtained from the leaves of *Pinus sylvestris* and sometimes called *Fir-wool Oil*, he observed that, administered by inhalation, it has of late been recommended in certain diseases of the throat and respiratory organs.

Dr. Morell Mackenzie, by whom in this country it has been chiefly prescribed, has also employed the essential oil of the leaves and twigs of *Pinus Pumilio*, a pine which covers many of the barren limestone slopes of the Southern Alps at an elevation of 4000 to 7000 feet. This pine is closely related to the Common Scotch Fir (*Pinus sylvestris*), but has a curious decumbent habit of growth, giving it the aspect of a shrub of 6 feet high with long branches spreading along the ground: seen covering the mountain-side, it might at a distance be mistaken for furze (*Ulex Europæa*). The essential oil is distilled at Reichenhall in Bavaria, as well as in other places, and held in high estimation by the Germans, who use also an aqueous extract made of the leaves, and other preparations. The oils of *Pinus sylvestris* and of *P. Pumilio* have been prescribed in England, in the form of emulsion made thus:

℞.
Olei pini sylvestris ʒijss
Magnesiæ carbonat. ʒiss
Aquæ destillatæ ad ℥iij

Misce.—One or two tea-spoonfuls in a pint of warm water to be inhaled (from an inhaler) for ten minutes twice a day.

Dr. Mackenzie has also prescribed the oils of *Abies pectinata*, of Cajeput, of Hops and of Sandal wood. The specimen of oil of *Abies pectinata* was distilled in the neighbourhood of Bern. In odour it resembles the fine, transparent and fragrant turpentine which is yielded by the trunk in very small quantity, and which was formerly found in the shops under the name of *Strasburg Turpentine.*

The oils of Canella, Chian Turpentine, Ptychotis and Origanum were distilled for chemical examination, and have not been employed in medicine. That of Lignaloë is used in Mexico as a perfume.*

CARBOLIC ACID AND HUMAN PARASITES.

BY T. A. READWIN, F.G.S., ETC.

There are plants and animals which derive their nourishment from, and reproduce, and grow, in, or upon, other plants and animals. Such plants and animals are called *parasites*, because they so feed and are so nourished. All plants and animals, probably, are fed upon by parasites. All vegetal parasites that have been observed upon or in the human body belong to the lowest forms of vegetation, namely, the Algæ and the Fungi. The animal parasites discovered belong, also, to the lowest forms of animal life. Some of the animal parasites are of considerable size and power; but many of both vegetal and animal parasites are extremely microscopic. Both kinds are found, either upon the exposed surface of the skin and mucous membranes, or floating in the fluids of the body.

Animal parasites were at one time regarded as the chief cause of disease; some of these, however, are known to live on the surface of the human body (epizoa); others, in the interior (entozoa).

Parasites having been found on and in most parts of the body, both of the healthy and the diseased, it becomes an inquiry of the highest importance, whether an efficient antidote to these ills which human flesh is said incorrectly, I think, to be *heir to*, can be found.

That antidote, I believe, has been found in carbolic acid; this extraordinary tar-product, in a dilute form, is known now to destroy all the low forms of life, whether animal or vegetal.

It has long been held that the air we breathe for life, contains also extremely active powers of destruction, and that filth and offensive odours are detrimental to health; but, only comparatively recently, however, has it been discovered that the air holds, *also*, floating in it, myriads of the minutest *germs* of plants and animals, and that these mysterious atoms alight sometimes upon the bodies of living beings, enter their lungs, their blood, their tissues, and there develope and multiply exceedingly, and become the *sources* of *disease*, infection, and death.

It is now certain that these putrefying (septic) germs are great causes of putrefactive *fermentation*; that fermentation is intimately connected with *inflammation;* that most *diseases* result from inflammation; that carbolic acid (antiseptic) will kill all septic germs, and thus remove many *causes* of disease; that glycerine is a very powerful healing-agent; that carbolic acid is freely *soluble* in glycerine; and that their *united* application has resulted in the speedy cure of some of the most dangerous diseases. It follows, therefore, that these new therapeutic agents demand very special attention.

As a rule, it is better to dissolve the crystallized carbolic acid (Calvert's) in the proportions of one part by weight of the acid to six of glycerine (*carbo-*

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* Some account of the wood from which it is obtained, will be found in a paper by Mr. Collins in the *Pharm. Journ. and Trans.* for April 1869, p. 590.

late of glycerine). In this state it can be equally diluted to any degree of strength.

In general, a *dose* of carbolic acid is 1 grain in an ounce of water.

As a *gargle*, 1 or 2 grains to an ounce of water.

As an *injection*, 1 grain to 4 ounces of water.

As a *lotion*, 15 grains to an ounce of water.

As an *ointment*, 16 grains to an ounce of benzoated lard.

As a *liniment*, 1 part to 20 of olive oil.

As a *plaster*, 1 part of carbolic acid to 3 parts of shellac.

The crystallized carbolic acid to be used as a caustic.

The carbolate of glycerine, as above, use in 1 or 2 drop doses, internally.

Antiseptic oil for abscesses, 1 part of acid to 4 of boiled linseed oil.

Antiseptic putty, 6 spoonfuls of the antiseptic oil mixed with whiting.

Aqueous solution of carbolic acid is 1 part of acid to 40 of water (1 ounce of acid to a quart of hot water well agitated and filtered).

Sick-rooms, to disinfect: place a portion of the dissolved crystals in a porcelain dish, and float it in a larger vessel of hot water.

Disinfecting purposes generally: 1 pound of *crystals* to 6 gallons of water. *Fluid*, 1 part to 80 of water. *Powder*, 1 ounce of crystals with 4 pounds of slaked lime.

For drains: 1 pound of the fluid carbolic acid to 5 gallons of warm water.

Tooth-ache is often cured with 1 drop of carbolate of glycerine; and diarrhoea arrested in half an hour with 2 drops in a wineglass of water.

In all cases of parasitic life it is advisable to commence with very dilute carbolate of glycerine.

Inasmuch as carbolic acid will destroy the power of *vaccine virus*, it becomes an interesting inquiry as to the possibility of using carbolic acid internally as a preventive, so as to fortify the human system against the incoming of zymotic diseases.

I have some striking facts in support of this probability; but my observation has been too limited to do more than incline to the belief; and here I leave it in the hands of the Conference, expressing my readiness to give further details if the members desire it.

The **President** congratulated his fellow-members that, if the author's statement of the parasitic population of the human body was an alarming one, they might find comfort in the virtues of carbolic acid, which he had also asserted.

Mr. **Yewdall** (Leeds) noticed that the author of the paper advised olive oil for admixture with carbolic acid, to produce antiseptic putty. Professor Lister had recommended linseed oil, and he would be glad to know in what the advantage of olive oil consisted.

Mr. W. V. **Wright** (London) pointed out the unusual character of this paper, the subject having been treated therapeutically, and not from a pharmaceutical point of view. He thought the introduction of questions of curing diseases was altogether out of place there.

Dr. F. **Crace Calvert**, F.R.S. (Manchester), said he was constantly receiving inquiries from pharmacists and other chemists as to the mode of using carbolic acid in particular cases, and it was impossible for persons to understand enough of the use of this substance unless they were informed as to its qualities. It was a powerful agent for good when applied with skill and knowledge, and it was a dangerous one if used without these guides. It was very desirable that all who had to do with carbolic acid for medical purposes should understand the great change produced by its admixture with glycerine. It was certain that the union of these two substances was a true chemical combination, by which the activity of the carbolic acid was much modified. Pure carbolic acid is a caustic, but a mixture of equal parts of carbolic acid and glycerine does not possess caustic qualities. He did not hesitate to say that the internal use of carbolic acid produced a prophylactic effect as regards many diseases, and he had seen this especially in checking the spread of scarlet fever. Again, he might quote the instance of a recent outbreak of intermittent fever at the Mauritius. The medical officers in charge of the troops had the pluck—he would use that word—to inject carbolic acid, and the result was highly satisfactory. An official report of the case had been published. There could be no doubt that many diseases were produced by germs conveyed through the atmosphere. Again, the human body threw off organic emanations, which soon acquired highly deleterious qualities. Thus, Dr. Angus Smith had made an experiment upon a room in a fort where twenty soldiers slept. A pailful of water placed in the room became putrid within forty-eight hours, but a similar pailful placed in the open air remained good for several weeks. It was to the life of these germs that carbolic acid was peculiarly destructive, and he could adduce a large mass of medical evidence to show that it arrested the spread of disease.

Mr. W. W. **Stoddart** said that he was in a position to corroborate all that Dr. Crace Calvert had said about the successful use of carbolic acid during the outbreak of fever at the Mauritius, since it was his (Mr. S.'s) brother-in-law who had used it; and his letters described the effects as Dr. Calvert had done. He might also mention another use to which the acid had been put. The inhabitants of some houses in Bristol, near the floating harbour, suffered from an eruption on the skin, which ultimately was traced to the bites of mosquitoes. The medical inspector wetted cloths with carbolic acid and hung them in the rooms, which put an end to the annoyance immediately. It also answered for getting rid of flies.

Dr. **Calvert** replied to Mr. Yewdall's inquiry to the following effect:—Olive oil is preferable to linseed oil as a vehicle for using carbolic acid in surgical cases, because linseed oil absorbs oxygen from the atmosphere, and heat is developed as a consequence, which is not the case with olive oil.

Dr. **Calvert** placed on the table a specimen of carbolic acid of great beauty, exhibiting needle-like crystals of several inches in length.

THE STRENGTH OF DIFFERENT SAMPLES OF DONOVAN'S SOLUTION.

BY W. E. HEATHFIELD, F.C.S.

Great as has been the value to medicinal practice of the preparation suggested by Dr. Donovan, and designated by his name, it has been open to the serious inconvenience that those contributors to pharmaceutical science who have proposed alterations in the formula for its manufacture have either recommended an alteration in the original strength, or have advised such a variation in the mode of manipulation as to alter the character, such as was contemplated by the distinguished physician who first proposed its introduction, and then generously gave the formula to the profession.

There are, at least, five published formulæ for Donovan's solution to be found in the archives of pharmaceutical contributions, and not one of which is precisely in accordance with the other. On examining the products which are the result of these processes, they vary considerably, and all differ in analytical constitution from that proposed by Dr. Donovan, and thus that reliance on uniformity of strength, which the physician and the dispenser alike should secure, is entirely merged in the aim to improve or modify.

The formulæ that have been chiefly recommended are as follows:—

1.

Donovan.

Arsenic Metal	6·08
Mercury	14·82
Iodine	49·
Alcohol	q.s.
Water	8 oz.

2.

Pereira.

Arsenic	6·08
Mercury	15·38
Iodine	50·
Alcohol	1 dr.
Boiling Water	8 oz.

3.

Dublin Pharm.

Pure Arsenic	6·
Mercury	16·
Pure Iodine	50½
Water	8 oz.
Alcohol	½ dr.

4.

Soubeiran.

Teriodide of Arsenic	35 grs.
Biniodide of Mercury	35 „
Water	8 oz.

And a writer in the 'Pharmaceutical Journal,' with the view of avoiding the inconvenience resulting from the noncombination of the iodine with the arsenic, which, he states, frequently occurs, gives the following :—

5.

Arsenious Acid	7·92
Iodide of Mercury	36·24
Hydriodic Acid	30·49
Distilled Water	8 oz. 6 drs.

"Mix and make up the solution to its original volume." "The hydriodic acid is best prepared by decomposing a known weight of iodide of barium with sulphuric acid."

Although the three first of these processes were recommended by very high authority, it will be perceived that they vary in the proportions of their ingredients; and, as it is admitted that there is some patience required and difficulty in effecting the complete combination of the arsenic with the iodine, M. Soubeiran proposed the direct union of the iodides of the metals. But, independently of the deviation from the strength originally contemplated by Dr. Donovan, M. Soubeiran's form is open to the objection that the iodides of mercury and arsenic vary in the proportions of moisture they contain, and thus lead to varying results. To alter a mode of manipulation may be perfectly legitimate, but to alter proportions of a preparation intended for public use, without leave of the introducer, is scarcely right. Great confusion has arisen in pharmacy from such a practice, and many very excellent preparations have been pronounced a failure, and been superannuated, owing to the difficulty entailed on a dispenser in attempting to determine which of many under one name is intended by the physician, and thus those, which for many reasons he may not see fit to use, become shelved. Dr. Donovan had in view a preparation which he seemed to have perfected, and the formula for which he most liberally published. He admits the difficulty of producing the combination with celerity, but he is fairly entitled to claim for a process which, if an alteration be made, shall not involve a variation in the proportions which he sets forth. When Dr. Donovan first made the solution he found that it generally proved to be of a very pale yellow, and then only when seen in large quantity, sometimes being as pale as water. When a few grains of iodine were added it became yellow; but when exposed to ordinary daylight it resumed its original colourless appearance; and further additions of iodine presented the same phenomenon. Dr. Donovan's formula is entitled to all commendation; and, provided the materials are pure, and with due attention to the manipulation, a preparation of definite composition, and having invariable properties, may be obtained. Thus :—

Pure Arsenic resublimed	6·08
Pure Distilled Mercury	14·82
Iodine resublimed	49·
Alcohol, 1 drm. or q. s.	
Water	8 oz.

The arsenic should be in the finest possible condition; the more minute, the more rapid the combination with the iodine. This combination should be first made with the arsenic by the addition of a little water, sufficient of the iodine being used for a perfect union; this should be carefully dried, and the remainder of the process completed by the entire and effective combination of the iodine remaining, together with the mercury, the iodide of arsenic, and as much of the alcohol as may be required. The proportion of water being added to make up eight ounces, there should result a solution of a permanent character, both physically and chemically. Dr. Donovan found that when the trituration of the ingredients was continued until the alcohol became as thick as treacle, he obtained the most effective and complete solution. This may be left to the operator, provided it be borne in mind that there should be no residue whatever. The process of Dr. Donovan may be advised for adoption, with these precautions, until the framers of any future Pharmacopœia see fit to authorize the recommendation of any other.

ON THE DETECTION OF FIXED OILS IN PLANTS.

BY THOMAS T. P. BRUCE WARREN, F.R.S.

The process here recommended is admirably adapted for detecting, on a small scale, the existence of fixed oils in vegetable substances.

It consists in treating the recent emulsion obtained by expressing the juices from the plant, first with hydrochloric acid, which precipitates caoutchouc if present, and destroys the emulsive character of the juice. The caoutchouc collects as a white tenacious mass on the surface of the liquid, which is to be completely removed.

The residue is strongly agitated with bisulphuret of carbon, and, after digesting for some time, the supernatant part is decanted off.

The bisulphuret of carbon will be found to have dissolved the fatty matter contained in the juice, which may be recognized by adding a few drops of dichloride of sulphur. A granular precipitation immediately follows on the addition of the dichloride of sulphur, which is not redissolved either in ether, chloroform, or bisulphuret of carbon, even when assisted by heat.[*]

The hydrochloric acid should be added in tolerably large quantity, to ensure the agglutination of the caoutchouc, since it does not interfere in the least with the subsequent part of the test.

In dealing with woody or hard fibrous substances, the same in coarse powder may be simply digested in bisulphuret of carbon, and afterwards in the manner above indicated.[†]

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[*] These precipitates may, in some instances, be regarded as presenting individual characteristics, and thus offer a means of detecting admixtures of oils.

[†] It will be better, in some cases, to treat such substances with highly rectified and washed ether, and to precipitate the caoutchouc by the addition of a small quantity of alcohol.

ON THE PURIFICATION OF AMMONIACAL SALTS FROM GAS-LIQUOR SO AS TO UTILIZE THEM FOR PHARMACEUTICAL PURPOSES.

BY WENTWORTH LASCELLES SCOTT, F.C.S., ETC.

In offering, somewhat prematurely, a few remarks upon this subject, I do so merely with the view of eliciting the results arrived at, or opinions held by other inquirers, as a means of more thoroughly ventilating the entire question in the time to come.

The extraction and fixing of ammonia-salts from all varieties of coal-distillates is so well understood, that any mention of these commercial processes, which are conducted upon an enormous scale all over the country, would be quite superfluous. The one point with which we have to deal is, that however often these gas-ammonias,—say the chloride and sulphate of ammonium, —are recrystallized (within, of course, the stern commercial limits of what will pay), they are still contaminated with a persistent tarry odour or "twang," which renders them unfit for the preparation of "Liq. Ammon. Acetatis," etc.

Long-continued boiling with excess of acid, of course, drives off the more volatile hydrocarbons, but fails to remove those tarry and resinoid matters whose presence is most objectionable.

I have lately adopted a process which certainly has in many instances admirably fulfilled its purpose; whether it will answer equally well for all the varieties of ammonium-salts derived from coal, must be determined by more extended experience. Anyhow, the method succeeds perfectly in numerous cases, and has the merit of inexpensiveness at least.

To the solution of roughly-purified sulphate of ammonium some persulphate of iron is added (or, what is the same thing, some iron-rust, or any convenient form of old, oxidized iron, is dissolved in the acid solution), and the whole is brought to the boiling-point. A small quantity of a dilute solution of permanganate of potassium is next added in gradually, until a little of the liquor, filtered and neutralized with pure alkali, when cool, no longer decolorizes a drop of the permanganate solution.

At this stage, a slight excess of alkali is added to precipitate the whole of the metallic oxides, which carry with them all that remains of the contaminating matters. The liquor may then be safely employed for the preparation of the acetate or other salt, which will then be free from all objectionable odour or flavour.

The quantity of permanganate required is extremely small.

ON THE VARIATIONS IN THE QUALITY OF COMMERCIAL CHLORINATED LIME.

BY WENTWORTH LASCELLES SCOTT, F.C.S., ETC.

(*Second Report.*)

I have but little to add to my former observations upon the above subject (*vide* proceedings of the Conference, Norwich meeting), but beg to offer some further analyses of chlorinated lime, fourteen samples of which I have examined since the last meeting.

Communications received from manufacturers of the "bleach," as well as from some large consumers, show that several in each class would be pleased if the article were generally sold according to its value in "*chloricents*," as originally proposed by me. Some formal resolution, or expression of opinion of an association or meeting of persons interested in the matter, would probably best pave the way for the reform so greatly needed.

With the present brief note, my connection with "chlorinated lime" will probably cease, as there can be but little use in protracting the purely chemical part of the inquiry, unless its practical and commercial bearings receive their share of attention likewise.

I.

Table Showing the Variations in Quality of Commercial Chlorinated Lime.
(14 *Samples.*)

No. of Sample.	Price per cwt. (when known.)	Water per cent.	Available Chlorine per cent.	Total Chlorine per cent.	Matter Soluble in Dilute Acid. per cent.	Value at 6*d.* per Chloricent per cwt.	Observations.
1	16/3	5·2	22·4	27·6	4·9	11/3	Contaminated with *sulphides*.
2	14/6	7·4	17·0	25·7	6·3	8/6	Low sample, contained *chlorate*.
3	——	4·6	27·8	31·2	2·4	13/11	Very good "sweet" specimen.
4	13/4	5·8	18·8	24·1	4·6	9/4	Supplied by same maker.
5	——	12·6	10·5	19·3	8·1	5/3	
6	13/4	8·2	25·5	——	——	12/9	
7	15/6	3·7	35·7	37·3	2·1	17/10	Very fine sample.
8	12/9	10·7	9·4	23·2	4·4	4/9	Useless for most purposes.
9	15/0	7·5	16·8	20·6	3·7	8/5	"Stinking," from presence of *phosphides*.
10	——	——	12·2	16·3	3·3	6/1	Contained *chlorate*.
11	——	9·6	13·8	——	——	6/11	Dark-coloured from ferruginous matter.
12	17/6	5·9	15·2	27·1	——	7/7	Unpleasant odour.
13	——	4·0	26·3	29·3	3·7	13/4	Excellent samples.
14	——	3·3	31·2	34·9	2·2	15/7	

A glance at the accompanying table (Table I.) will show that out of the entire 14 samples, fully 10 were quite unsuited for use in pharmacy, so by way of practical comment thereon, I have also examined a few samples of Liq. Calcis Chloratæ purchased in various towns, "*Liq. Cal. Chlor.*, B.P.," being asked for in all cases. Not many specimens contained the requisite quantity of available chlorine—13 grains to the ounce—as will be seen by the annexed figures.

II.

Table Showing Variations of Commercial "Liq. Calc. Chlor."
(21 *Samples.*)

No. of Sample.	Grs. of Cl to the oz.	No. of Sample.	Grs. of Cl to the oz.	No. of Sample.	Grs. of Cl to the oz.
1	9·6	8	10·3	15	11·3
2	7·1	9	14·1	16	7·6
3	12·3	10	9·7	17	6·9
4	11·8	11	9·1	18	10·8
5	5·5	12	6·8	19	12·6
6	8·4	13	12·8	20	4·6
7	8·9	14	10·5	21	7·8

Ten samples of "Liquor Sodæ Chloratæ, B.P." were also tested for chlorine, by the published formula, *i. e.* 70 grains (by weight) of the liquid with 20 grains of iodide of potassium in 4 ounces of water, acidulated with hydrochloric acid, were tested with the volumetric solution of hyposulphite of sodium, B.P. As will be seen from the table, only 3 specimens required anything approaching to the prescribed amount (500 grain-meaures) of hyposulphite for the decolorization of the solution.

III.

Table Showing Variations of Commercial "Liq. Sodæ Chlor."
(10 *Samples.*)

No. of Sample.	Grs. of test Solution required.	No. of Sample.	Grs. of test Solution required.
1	455	6	450
2	510	7	485
3	395	8	335
4	370	9	290
5	420	10	480

Although not so ordered, Liq. Sodæ Chlor. is frequently made from chlorinated lime and carbonate of sodium by double decomposition, a proceeding which sufficiently accounts for the extreme variation in strength observed.

NOTE ON SULPHUROUS ACID.

BY WENTWORTH LASCELLES SCOTT, F.C.S., ETC.

Having had some little experience in relation to the manufacture of the above acid, both in quantities of a few ounces, and upon a very extensive plan, I can scarcely corroborate those contributors to the 'Pharmaceutical Journal' who have spoken of the extreme difficulty of preparing "sulphurous acid, B. P." I have recently superintended the erection of some apparatus for the production of the acid upon rather a large scale, at the works of a well-known manufacturing firm,* and, except in some minor details, the arrangements present no particularly novel points.

A uniform pressure of 3 lbs. per square inch is maintained by means of a water-column, and the process goes on continuously, the acid in the first receiver-jar being drawn off when sufficiently strong, and its place occupied by the weaker fluid contained in the last jar of the series; this, in its turn, being refilled with distilled water. As only the purest and most compact varieties of carbon are permitted to be used in the retort, which is of cast iron, and constructed specially for the purpose, the stoppages for clearing out, etc., are few and far between. Oil of vitriol, containing 74 per cent. of anhydrous acid, is found more convenient in practice than either a weaker or stronger variety; as when *too* concentrated acid is employed, a portion of it is liable to entire reduction, and sulphur incrustations are formed in unpleasant abundance, while, upon the other hand, a dilute vitriol causes the evolution of sulphuretted hydrogen. A little carbonic *oxide* is generally to be detected amongst the gases evolved, but its presence is in no degree objectionable.

For washing the gas, simple water is of course sufficient, but the addition of some sulphite of lead, and a few pieces of charcoal, gives a purer acid. I quite agree with those previous writers who are of opinion that a 5 per cent. solution of sulphurous acid is of ample strength for all ordinary purposes; but, at the same time, I cannot admit the existence of any insurmountable difficulties in the way of preparing it of 1½ times or even twice the above strength.

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* William Bailey and Son, Wolverhampton.

The following table shows the mean specific gravities at 60° F. of pure solutions of sulphurous acid, containing from 0·5 per cent. up to 10 per cent. of the anhydrous acid. I believe their accuracy may be depended upon, the determinations having been made by oxidation and conversion into the barium salt of sulphuric acid:—

Per Cent. of SO_2.	Sp. Gr. at 60°.	Per Cent. of SO_2.	Sp. Gr. at 60°.	Per Cent. of SO_2.	Sp. Gr. at 60°.
0·5	1·0028	4·0	1·0221	7·5	1·0401
1·0	1·0056	4·5	1·0248	8·0	1·0426
1·5	1·0085	5·0	1·0275	8·5	1·0450
2·0	1·0113	5·5	1·0302	9·0	1·0474
2·5	1·0141	6·0	1·0328	9·5	1·0497
3·0	1·0168	6·5	1·0353	10·0	1·0520
3·5	1·0194	7·0	1·0377		

I have hastily examined eight specimens of "sulphurous acid B. P." purchased of various retailers; I give the specific gravities and percentages of SO_2 of each, the differences between these and the corresponding figures in previous table being due to *sulphuric* acid:—

No. of Sample.	Sp. Gr. at 60°.	Per Cent. of SO_2.	No. of Sample.	Sp. Gr. at 60°.	Per Cent. of SO_2.
1	1·022	3·4	5	1·042	7·8
2	1·017	2·7	6	1·031	4·9
3	1·019	2·4	7†	1·016	2·5
4*	1·032	6·1	8	1·024	3·7

Several substances appear to exercise a *preservative* action upon sulphurous acid, or in other words retard its oxidation, among them grape-sugar, formic acid, camphor, and more especially aldehyde; and I think it might be worth while to ascertain, firstly, the exact amount of influence exerted by the last two, and secondly, whether the addition of either, in small quantities, would present any very serious objections.

Sulphuric acid is naturally a very unwelcome ingredient; but *old* sulphurous acid containing it may be restored for all practical purposes by the cautious addition of a solution of sulphite of barium in sufficient quantity to precipitate *very nearly*, but *not quite* all the sulphuric acid as insoluble sulphate of barium, the latter being afterwards separated by filtration or decantation. I lay perhaps rather more stress upon the use of sulphite of barium than I should have done if I had not seen the extremely pernicious effects of some of the acid ordinarily sold, when used in the form of "spray" for throat affections, owing merely to the presence of an undue proportion of the higher oxide of sulphur.

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* Made from impure water.

† Either very old or improperly prepared.

REPORT ON THE COMMERCIAL POWDERS OF GINGER AND CINCHONA.

BY WENTWORTH LASCELLES SCOTT, F.C.S., ETC.

I have examined about thirty specimens of "powdered ginger," and nearly as many samples of "bark," since the last meeting of the Conference, and will submit the results obtained to your notice without further preface, not, perhaps, exactly in the form of a *précis* for the "proceedings," but still, I trust, in a sufficiently concise manner, so as to absorb as little of your time as possible upon what must be a comparatively uninteresting subject.

The methods of testing I have purposely confined to what might be termed the "rough-and-ready" class, as being more likely to be adopted by the ever-busy members of our Society, the greater number of whom have neither the time nor the appliances required for a series of "complete quantitative analyses."

Taking "ginger" first, it may be remarked that more than three-fourths of the entire number of samples were described as "Jamaica ginger" by the vendors or upon the labels; indeed, any unsophisticated purchaser would be gradually impressed with a conviction that the *Zingiber officinale* will only flourish upon the island just named. As it would be impossible to describe the appearances of the various specimens under the microscope without exhibiting drawings, I shall merely observe that this instrument is extremely valuable in these and all similar inquiries, and that even the cheaper microscopes with low powers and lower definition will often show, in a most unmistakable manner, the difference between genuine and adulterated samples of "ginger" and "cinchona."

In the accompanying table the third column, perhaps, needs a few words in explanation. The figures there presented show the value of the several gingers by what might be called a "*sapometric method,*" the standards of comparison being a series of twenty solutions prepared as follows:—

A quantity of *best white ginger* was obtained,—four varieties in all (commercial), excluding the low Bengal and some other kinds, and a mixture made of equal parts, which was afterwards reduced to a fine powder. This was next exhausted by cold percolation, first with proof spirit, and finally with distilled water. The twenty solutions were prepared from this fluid extract in such a manner, that, while they all contained two fluid ounces of proof spirit in each pint, No. 1 held in solution the extract derived from 25 grains of the standard ginger; No. 2 the extract from 50 grains, and so on up to No. 20, which was equivalent to 500 grains of the pure ginger.

In comparing a sample of powdered ginger with these solutions, 500 grains of the former was taken and extracted in a similar manner, two ounces of proof spirit being employed, mixed with the aqueous extract, and the whole made up by the addition of more water to twenty ounces. The *taste* of this fluid was then carefully compared with that of the numbered test-solutions, until the one which agreed with it most perfectly could be definitively determined; the "sapometrical value" was found by multiplying the number of the solution by five. Thus, supposing that the extract of the sample under examination gives a solution of the same flavour and pungency as our test-solution No. 17, the flavour-value would be (17×5=) 85. Crude and imperfect as this plan may appear, it nevertheless furnishes a very fair approximation to the true value of any sample of ginger at a small expenditure of time and labour; and, as the majority of retail druggists buy their ginger ready ground, it presents to them a simple mode of guarding against the presence of adulterated or inferior ginger in their warehouses.

It will be seen from Table I. that, of thirty-two samples examined, nine only were found genuine. No. 8 was "highly recommended" and "warranted extra strong," which it certainly was, the additional pungency, however, being chiefly derived from "cayenne" rather than from "ginger."

TABLE I.

Showing the Variations in Quality of the "Powdered Ginger" of Commerce.
(32 *Samples.*)

Sample.	Where purchased.	Sapometrical Value.	Whether genuine or otherwise.	Remarks.
S		100		Standard.
P		97·5		Three samples of pure ginger prepared from the root.
P		100		
P		95		
1	London	85	Adulterated	Contained flour.
2	"	60	"	Contained flour and colouring.
3	"	95	Genuine	Very fine quality.
4	" *	25	Adulterated	42 per cent. of ash, chiefly burnt brick.
5	"	70	"	Lowered with starch.
6	"	90	Genuine	Like Bengal under microscope.
7	"	55	Adulterated	Mixed with *spent ginger*.
8	"	125	"	Mixed with flour and ground capsicum.
9	"	80	"	Lowered with spent ginger.
10	"	65	"	Mixed with rice starch.
11	"	100	Genuine	Magnificent specimen.
12	" *	95	"	Strong, but rather coarse.
13	"	35	Adulterated	A great variety of adulterants.
14	Liverpool	45	"	" " "
15	"	50	"	About equal parts good ginger and flour.
16	"	97·5	Genuine	Excellent quality.
17	"	60	Adulterated	Mixed with some kind of pulse.
18	Birmingham	95	Genuine	Rather dark colour.
19	"	80	Adulterated	Apparently mixed with spent spice.
20	"	55	"	27 per cent. ash contained lime.
21	" *	40	"	Mixed with flour and starches.
22	Leeds	60	"	Contained *mustard* (by accident?).
23	Bristol	70	"	Lowered with ground husks and woody matter.
24	Leamington	87·5	Genuine	Very good.
25	Moreton	65	Adulterated	Mixed with diseased flour.
26	Wolverhampton	72·5	"	Contained flour.
27	"	80	" (?)	No foreign substance detected, but sample weak from age?
28	Edinburgh	100	Genuine	Good.
29	†	90	"	Good and delicate aroma.
31	†	70	Adulterated	Contained flour.
32	†	85	"	Contained ground woody matter.

* Purchased at *grocers'* shops, all other samples having been bought at chemists'.
† Kindly furnished by Dr. Attfield.

Turning to the other portion of our subject, I must confess that here also there seems to be plenty of room for improvement; and I may perhaps venture the hint that our Conference might probably do good service by appointing a committee to inquire into the subject of impure drugs generally, and to report thereon at our next gathering.

TABLE II.

Showing the Variations in Quality of the "Powdered Cinchona," or "Bark," of Commerce. (27 Samples.)

Sample.	Where purchased.	If genuine, or otherwise.	Percentage of Alkaloids.	* Fluometric value.	Remarks.
S		Standard Specimens of Cinchona Barks.	2·71	105	Yellow bark.
S			2·36	92	,, ,,
S			1·94	76	Red ,,
S			1·60	65	Pale ,,
1	London . . .	Genuine . .	2·40	90	"Yellow."
2	,, . . .	,, . .	1·72	65	,, of inferior quality.
3	,, . . .	Adulterated.	...	15	Very bitter, apparently from admixture of gentian.
4	,, . . .	,, .	·82	35	Mixed with other woody matter.
5	,, . . .	,, .	·70	27	,, ,, ,,
6	,, . . .	,, .	...	12	(Sample destroyed before finished.)
7	,, . . .	Genuine . .	1·75	68	Fair specimen of the red bark.
8	,, . . .	Adulterated.	·24	...	A reddish ligneous powder with slightly astringent taste.†
9	,, . . .	,, .	·56	...	Flour, linseed meal, and spent bark.
10	,, . . .	Genuine . .	2·80	112	Very fine yellow bark.
11	,, . . .	,, .	·84	25	Poor specimen, but no apparent admixture.
12	Liverpool . .	,, .	2·00	72	A fair sample.
13	,, . .	Adulterated.	...	...	Simply rubbish.‡
14	Birmingham .	,, .	1·20	42	Mixed with spent bark.
15	,, .	,, .	1·42	11	Mixed with spent bark and salicine.
16	,, .	Genuine . .	1·85	74	Good sample of red bark.
17	,, .	Adulterated.	·14	5	Mixed with other woody matter.
18	Manchester . .	,, .	...	38	(Insufficient sample.)
19	,, . .	,, .	·60	18	Mixed with wood and limestone.
20	Edinburgh . .	Genuine . .	2·10	73	Fair specimen.
21	Glasgow . . .	,, . .	2·64	96	Excellent.
22	Dundee . . .	,, . .	1·45	53	Apparently the pale variety.
23	Bristol . . .	,, . .	1·05	86	Poor specimen of red bark.
24	,, . . .	Adulterated.	·42	16	Mixed with spent bark.
25	Wolverhampton	,, .	·74	31	Contained 15 per cent. argillaceous matter.
26	§	,, .	·82	29	(Accidentally wasted.)
27	§	Genuine . .	1·48	57	Probably from pale bark.

* "100 fluometric value" = 2·5 per cent. pure quinine.

† This was a *general mixture* of several woods with spent cinchona bark.

‡ Ground ligneous matter of some kind, flavoured with a little chiretta.

§ Kindly furnished by Dr. Attfield.

Out of twenty-seven samples purchased in small quantities, at various places, only twelve could be certainly classed as genuine, although it must be a matter of some little difficulty now and then to distinguish absolutely a poor and inferior bark from one which contains an admixture of the same bark in a spent and exhausted condition; it is here that the microscope does some good work.

I will not take up your time to-day by entering upon a detailed exposition of the results, but will allow Table II. to tell its own story. The alkaloids were determined generally by the following method, which I find gives tolerably definite results:—

200 grains or thereabouts of the bark to be examined are mixed with about half a drachm of bisulphate of potassium, and enough hot distilled water added to make the whole into a rather thin paste, which is digested upon a water-bath for several hours, more water being added to supply the loss by evaporation, unless a closed vessel be employed, which is certainly preferable. A few drops of strong hydrochloric acid are next stirred in, and afterwards about three ounces of hot water rendered also slightly acid. If twelve or fourteen hours' maceration can then be conveniently given, it will be well; if not, a shorter time will do, if the temperature be kept not much under 200° F. After careful filtration and washing of the residue with more acidulated water, a mixed solution of the acetates of lead and aluminum will be found best for separating colouring matter, etc., if cautiously added to the filtrate, after which a second filtration will be necessary. The clear liquor must be concentrated by evaporation to a small bulk and a slight excess of pure caustic soda added thereto. The alkaloids present may be extracted directly from the liquid by successively agitating it with small quantities of pure ether, or it may be mixed with sufficient pure plaster of Paris to cause the solidification of the whole, and the cake thus formed after being carefully dried can then be very conveniently exhausted with anhydrous ether.

The figures which appear in the fifth column of the table almost speak for themselves. The *fluorescence* of soluble quinine-salts is here taken advantage of, and offers a ready method of comparing various samples of bark, for their *quinine-value*, both with each other and with a standard series of 100 tubes, containing graduated solutions of the pure alkaloid.

I may in conclusion observe that in two or three instances my results have been confirmed by the confidential admissions of the vendors themselves, who have duly promised to amend their ways: they will doubtless join the "British Pharmaceutical Conference" as soon as their consciences are *quite* clear.

Mr. BALKWILL expressed the hope that assistants and pupils would be encouraged to attend the meetings of the Conference.

Mr. COOPER said that several were present yesterday.

Mr. INCE recalled the meeting at Nottingham, when a considerable number of the young men engaged in the town were present.

Some discussion followed as to whether invitations should be sent to the medical practitioners of towns in which the meetings were held, in which Mr. PALK, Mr. RADFORD, Mr. KNAPMAN, Mr. GUYER, and others, took part. It was stated that invitations had been issued to the physicians and surgeons of Exeter, but from the short notice given only a few had attended.

The general feeling was that the Local Committee might on each occasion be entrusted with the power of invitation, the PRESIDENT expressing his opinion in favour of the attendance of medical men, and also hoping that all convenient facilities would be given by members to their young men.

Mr. **Ince** moved the following resolution:—

"That the cordial thanks of this meeting be hereby offered to the Exeter members of the Conference generally, and especially to Messrs. Cooper, Husband, and Palk, for their great and successful efforts to promote the objects of the Conference, and the convenience and pleasure of their visitors."

Mr. **Ince** said that the resolution itself would serve instead of any commendatory speech, as he was certain that every other visitor would sympathize with him in its expression.

Mr. **Stoddart** seconded the motion, expressing the gratitude which all felt towards their brethren in the city of Exeter for the most kind and considerate way in which every wish had been met.

Professor **Attfield** said that he must be allowed to say a word or two bearing on this resolution before it was put to the meeting. Having been in constant communication with their Exeter brethren through the gentlemen named in the resolution, he wished to add his testimony to the untiring efforts which had been made to secure the comfort of every visitor. The room in which they assembled was, in itself, a matter for much admiration. It had been most pleasant that their business was conducted in that beautiful Hall, surrounded by the portraits of Exeter worthies, who seemed to smile benignly upon them, and in keeping with which there was such pleasant antique carving and furniture. The attendance of members from a distance was most gratifying, and he attributed this very greatly to the attractions of the meeting held out by their friends at Exeter and Torquay in the circular that had been issued.

The **President** said that he could not put the resolution without expressing his personal feeling with regard to the kindness which they had experienced at the hands of their Exeter fellow-members. The Hall in which they met was perfectly adapted to their wants, and recalled to his mind a meeting of the Société de Pharmacie in Paris, rather than any room in which such meetings could ordinarily be held. He should always retain a grateful recollection of the kindness which had been shown towards them.

The resolution was carried with great heartiness.

Mr. **Cooper** responded, and said that, had it been needful, they would gladly have done more to promote the success of the meeting. He hoped the visit of the Conference to Exeter would leave its influence behind, and induce the chemists of their city to continue to meet in that brotherly and friendly spirit which it endeavoured to promote.

Mr. **Husband** said that it gave him very great satisfaction to find that their efforts had met with the approval of those for whom they were made. The meeting had been a great source of gratification to him in the attendance, the papers read, and the discussions. He was very glad that they had had the presence of one whose career was older than any pharmaceutical organization—his friend, Mr. Morson—to whom pharmacy in England was greatly indebted.

Mr. **Palk** confirmed the expressions of the two previous speakers, and said he hoped the meeting would stimulate them to a more successful local organization than they had at present, some particulars of which he gave. He was sure that all who had attended the meeting must have gained something from the ample stores unfolded to them.

Mr. **Balkwill** moved the following resolution, supporting it by a high eulogium on the President:—

"That the hearty thanks of the Conference be offered to the President, Mr. Daniel Hanbury, F.R.S., for the ability with which he has fulfilled the obligations of his office."

Mr. **Radford** seconded the motion, expressing his great admiration of the able manner in which Mr. Hanbury had presided. Although this was the first meeting of the Conference which he (Mr. R.) had attended, he did not intend that it should be the last.

The resolution was put to the meeting by Mr. H. S. **Evans**, as a Vice-President, and was enthusiastically carried.

The **President** acknowledged the vote, and expressed his obligations to the General Secretaries for the arrangement of the business of the meeting.

Mr. **Savage** moved, and Mr. **Manby** (Southampton) seconded, a vote of thanks to the General Secretaries and Treasurer, which was very cordially carried, and to which those officers responded.

FINAL MEETING.

Tuesday, August 24.

The final meeting was held at 10 A.M.; Mr. G. **Cooper**, Vice-President, in the chair.

Mr. H. S. **Evans**, President of the Pharmaceutical Society, moved:—

"That the invitation from Liverpool to hold the meeting of the Conference there in 1870 be accepted."

Mr. **Evans** said that although he did not now reside in Liverpool, as he formerly did, he knew enough of its chemists to vouch that they would receive the Conference with open arms, and do everything that was possible to make the meeting a successful one.

Mr. **Palk** seconded the motion, which was carried unanimously.

Mr. **Evans** moved, and Mr. **Palk** seconded, the following resolution:—

"That the General Secretaries be instructed forthwith to advertise for the services of an Editor for the 'Year-book of Pharmacy,' which it has been determined to publish next year."

Carried.

Mr. **Carteighe** moved, and Mr. **Savage** seconded,—

"That the best thanks of the Conference are due and hereby tendered to the Exeter Local Committee for their invaluable exertions in securing the success of this meeting. A copy of this resolution is to be sent to each member of the Committee."

Carried very heartily.

Mr. **Francis** moved, and Mr. **Matthews** seconded,—

"That the thanks of the meeting be tendered to the Rev. Mr. Corfe for his kind permission to use the College Hall."

Carried.

The ballot for officers for 1869–70 was taken, and the Chairman announced the following as the result:—

Officers for 1869–70.

President.

W. W. Stoddart, F.G.S., etc., Bristol.

Vice-Presidents who have filled the office of President.

H. Deane, F.L.S.
Professor Bentley, F.L.S., M.R.C.S.
D. Hanbury, F.R.S., etc.

Vice-Presidents.

J. Abraham, Liverpool.
H. C. Baildon, Edinburgh.
H. S. Evans, F.C.S.
J. Ince, F.L.S., F.C.S., etc.

Treasurer.

H. B. Brady, F.L.S., F.C.S., Newcastle-on-Tyne.

General Secretaries.

Professor Attfield, Ph.D., F.C.S.
R. Reynolds, F.C.S., Leeds.

Local Secretaries.

E. Davies, F.C.S., Liverpool.
J. Dutton, Rock Ferry.

Committee.

F. B. Benger, Manchester.
S. C. Betty.
M. Carteighe, F.C.S.
G. Cooper, Exeter.
T. B. Groves, F.C.S., Weymouth.
W. Martindale.
J. F. Robinson, Liverpool.
G. F. Schacht, Clifton.
F. Sutton, F.C.S., Norwich.

These Officers collectively constitute the Executive Committee.

Mr. BRADY moved, and Mr. BROUGH seconded, a vote of thanks to the Chairman, which was carried by acclamation, and acknowledged by Mr. COOPER.

COMPLIMENTARY DINNER.

On Thursday evening, August 19th, the chemists of Exeter gave a dinner to their visitors at the London Hotel. Mr. G. Cooper occupied the chair, and Mr. Palk the vice-chair. The entertainment was well adapted to give the visitors a most favourable impression of the hospitality of the citizens of Exeter. After the usual loyal toasts,

The CHAIRMAN called upon the assembled guests to drink "Success to the British Pharmaceutical Conference," and, in associating with the toast the name of Mr. Daniel Hanbury, he gracefully commented on the services which that gentleman had rendered to pharmacy.

Mr. HANBURY responded, and likened the Conference to a snowball, which grew larger, and became more firmly consolidated as it progressed. He announced that Mr. Hills had presented to the Conference the handsome sum of fifty guineas, of which ten guineas would be applied to the purchase of books for the chemists' library in Exeter, and that he had further promised to place in the room where the local meetings were held proof plates of the portraits of Jacob Bell and William Allen. Mr. Hanbury concluded by proposing the health of Mr. Hills.

Mr. HILLS, in returning thanks for the compliment paid him, said that he had often felt the want of books when young, and that he hoped that his proposed application of his contribution would pleasantly remind the young men of Exeter and other towns of the visits of the Conference. What he wished to do was to promote, by all the means he could command, the objects for which his lamented friend Jacob Bell had so strenuously laboured.

The toast of "The Officers of the Society" was responded to by Mr.

Brady, Mr. Reynolds, and Dr. Attfield. The latter, in a short speech, remarked that the Pharmaceutical Society had been greatly benefited by the proceedings of the Conference.

The toast of "The Visitors from a distance" was acknowledged by Mr. Morson, and Mr. Evans, the President of the Pharmaceutical Society.

Mr. Palk proposed "The Visitors from Torquay," and the toast was responded to by Mr. E. Smith and Mr. Narracott.

The remaining toasts were :—

"The Pharmaceutical Press," coupled with the name of Mr. Brough, who responded in his usual manner.

"The Chairman," proposed by Mr. Ince, and acknowledged in a genial spirit by Mr. Cooper.

"The Exeter Chemists," proposed by Mr. Hanbury, and responded to by Mr. Husband and Mr. Palk.

"The Contributors of Papers," acknowledged by Mr. Stoddart.

EXCURSION TO TORQUAY.*

The members of the Pharmaceutical Conference having been invited by the local chemists to visit Torquay, on Friday, August 20th, a goodly number started by early train from Exeter, arriving at Torquay shortly after eleven.

At the station, they were met by the Torquay chemists, with breaks and other conveyances, and, after some few moments spent in recognition, etc., the party started for Watcombe, the first point in the day's programme. Within a few yards of the station, Torbay suddenly bursts in full view, arresting the attention of all by its wonderful beauty; the deep blue of the water, and the white-tipped waves, contrasting so charmingly with the warm red of the sandy shore and rocky cliffs. Historically, this bay has great interest. It was at Brixham, the southern shore of the bay, that the Prince of Orange landed some 200 years ago; in this bay Napoleon was detained a prisoner on board a British man-of-war for some time previously to his removal to St. Helena; it was here, too, that many ships of the great Spanish Armada took refuge from the storm which overtook them,—some of them were captured by the local volunteers of those days, and placed in durance vile in a large building connected with old Torre Abbey, and which to this day retains its name of the Spanish Barn. This building, and a portion of the old Abbey, were conspicuous in the fields on the left of the road. Next to the Abbey is the marine residence of Miss Burdett Coutts, who spends much of her time here.

The party, proceeding along the winding road under the cliffs, and along the shore, entered the town, and passing along the Strand, Union Street, and through the Rocky Valley, with its very pretty natural arch on the right of the road, shortly espied Watcombe. Here the party alighted, and at once separated into lively units of motion,—some admiring the ivy-crowned masses of conglomerate rock which rises in tower-like masses nearly 300 feet in perpendicular height, having the appearance and giving one the idea of some monster castle in ruins; others racing down the grassy slopes overlooking the sea. A flock of sheep occupied the foreground, the deep blue sea in the middle distance, and the retiring lines of coast stretching as far as the eye could see, taking in the Dorset coast as far as Portland Bill. Many and warm were the expressions of admiration elicited by the wonderful and beautiful scenery around. The late Mr. Brunel, the eminent engineer, selected this beautiful spot for a residence, and purchased grounds, and planted rare ornamental trees, shrubs, etc., but did not live long enough to construct more than the foundation of his intended mansion.

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* The foregoing graphic report is from the pen of Mr. Edward Smith, a gentleman to whose judicious and untiring exertions much of the success of the day was due. Mr. Ginger, the chairman of the sumptuous dinner provided at the Royal Hotel, Mr. Narracott, who like Mr. E. Smith was a Vice-Chairman, Mr. Watson, the Hon. Sec. of the Committee, Mr. W. Hearder, and other gentlemen, exerted themselves most earnestly throughout the whole day to add to the pleasure of their visitors. The gratification of all was much enhanced by the presence of the ladies; and remembering that our Dundee hosts in 1867 had in this respect shown similar gallantry to our southern entertainers of 1869, we added another red-letter day to the many that occur to faithful attenders of meetings of the Conference.

But now the bugle sounds the assembly, and once more a start is made. This time for Babbacombe, the second point in the programme. A drive of ten or fifteen minutes past the fine old parish church reveals Babbacombe Down and Bay; at once a halt is ordered; on the lawn in front of the hotel, luncheon had been prepared for the visitors. The work of demolition speedily commenced, and, under the influence of an invigorating sea-breeze, every one seemed thoroughly and earnestly anxious to do full justice to the immediate work before him. After luncheon, the visitors separated in groups, admiring with the greatest possible enthusiasm the rich and varied scenery. Taking in a greater expanse than Watcombe, and standing on the Downs, an eminence some 200 feet immediately above the sea, Dawlish, Teignmouth, Exmouth, Lyme Regis, etc., can easily be seen; Petit Tor, at the base of the rocks, whence comes the so-called Torquay marble, at present worked by a local firm, was especially remarked. Some members were fortunate enough to secure beautiful and instructive specimens. The magnificent white pebble beach, contrasting so charmingly with the red conglomerate on the one hand and the grey limestone on the other, combined with the soft cadence of the rippling waves, gave a singular charm and beauty not to be surpassed in any part of her Majesty's dominions.

From Babbacombe, the greater number of the party, headed by one of the local members, made a pedestrian tour across the down, meeting the carriages at Anstis Cove. The walk across the breezy down was one of unparalleled beauty; it was intensely gratifying to see how the more venerable members vied with the more juvenile portion in lithesomeness of limb and buoyancy of step. "Ride past this scenery?" "No," said the venerable Mr. Morson, "I'll walk;" and immediately set off at the double, with a lightness and exhilaration perfectly wonderful. Some of the party, carefully threading the footpath down to the beach, and passing through the ravines, or over the immense boulders of limestone which here took the place of the conglomerate, soon reached Anstis Cove; the less venturesome, passing along the edge of the down, soon arrived at the same romantic spot.

Leaving Anstis Cove, a very short drive brought the party to Kent's Hole, a remarkable limestone cavern, which is being scientifically and carefully explored at the expense of the British Association, and under the personal superintendence of Messrs. Vivian and Pengelly. Here, Underhay, the guide, took charge; lighted candles were presented to each one, as well as a supply of magnesium wire. After a few introductory remarks by the guide, a move was made along a corridor and through several passages, until a large chamber was reached. Here the guide again offered some further explanation. The burning of the magnesium wire had a very peculiar and weird effect, illuminating the most remote and intricate recesses, here and there the stalactite depending from the passages, glittering and reflecting with diamond-like brilliancy. It was peculiarly interesting to hear that in this chamber had been discovered the remains of many extinct animals, besides the bones of others having modern representatives. The bones of the hyæna, tiger, elephant, besides flint implements and other ancient remains of human workmanship, as spindles, whorls, cut bones, etc., have been dug out in abundance, all testifying to the very great age of the cavern. The return from this chamber through "the oven," and back along the corridor into daylight, was soon accomplished.

The next point visited was Daddy Hole Plain, overlooking the British Channel and Torbay. The chasms in the rocks here afforded much interest. The eye taking in at a glance the whole of Torbay, from Berry Head on the south to Daddy Hole on the north, nothing could exceed the picturesque loveliness of the landscape from this spot: on one side could be seen Dartmoor in the distance, Hay Tor, and other eminences; on the other, the several ranges of hills, amidst which the Dart winds its way past quaint old Dartmouth to the sea, Torbay lying beneath in all its loveliness, dotted here and there with graceful yachts skimming the surface of the buoyant waves, and reflecting their snow-white sails in the transparent water.

By the kind permission of R. Harvey, Esq., the party strolled through the beautiful grounds of Rockend, arriving at the Royal Hotel shortly before five o'clock.

After a very short interval, the whole party, numbering about seventy, with the ladies, sat down to dinner. The proceedings, which were now of a very practical character, were enlivened by the strains of a military band; and, after sundry loyal and other toasts, the Exeter visitors proceeded to the station in carriages provided for the purpose, amid the cheers and congratulations of all around, the band meantime eloquently appealing to one's best feelings by striking up the fine old air, "Auld lang Syne." The excursion thus passed off without the slightest hitch to mar the pleasurable enjoyment of the scenery visited. Not the least enjoyable feature was the presence of the ladies, who were especially invited to join the party in the breaks, and at dinner, and who thus gave a charm and gracefulness and completeness to the whole day's proceedings.

ORIGINAL AND EXTRACTED ARTICLES.

ON OPPORTUNITIES FOR PHARMACEUTICAL EDUCATION IN THE PROVINCES.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—I observed with regret in the discussion which took place on Mr. Schacht's paper at the Exeter meeting of the Pharmaceutical Conference, a strong tendency on the part of some eminent pharmacists to deprecate the association of "students in pharmacy" with Schools of Medicine in the provinces.

In stating that at such schools chemistry and botany were but little encouraged, Mr. Schacht expressed a simple truth, but he drew, I think, rather too wide an inference when he concluded that they would therefore be everywhere badly taught. Mr. Reynolds, I dare say, found a class of students in medicine far from an appreciative audience, but no one who knows him will believe that he did his work less conscientiously on that ground; and I hope that his palpable expectation of "evil communications," etc., is unfounded. It is quite possible that it might be the case with a stray pharmacist attending classes as an outsider, so to speak; but the effect of a recognized and tolerably numerous section of students in pharmacy will be, almost certainly, to elevate the standard of class-work and class-teaching in the branches concerned. For the student in pharmacy it is really "*aut disce, aut discede*," and I do not, therefore, anticipate any bad effect, on the average, from the neglect of chemistry, etc., by other members of the classes. I cannot but think that where a local school of medicine exists, it should be *the* resource for the student of pharmacy who, on the one hand, distrusts his own unassisted efforts, and, on the other, does not see his way to Bloomsbury Square. Lastly, to the provincial teacher who perhaps for years has been as one crying in the wilderness, there will be much refreshment in the introduction of students attending, and attending to, his lectures.

I am, Sir, yours truly,
A. FREIRE-MARRECO,
Reader in Chemistry in Durham University.

Newcastle-upon-Tyne, September 21st, 1869.

PHARMACY ACT FOR IRELAND.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Dear Sir,—With much pleasure I have seen a communication this month to the effect, that it is the intention of Mr. Abraham to propose, at the October meeting of the Council, that steps be taken to assimilate the laws regulating pharmacy in Ireland and Great Britain respectively.

Pharmacy, in the strict sense of the word, is indeed at a low ebb in Ireland, and, to a great extent, this is owing to its embracing a medical qualification also, which, in most cases, is the main point with the Irish apothecary, the compounding of medicines being only an adjunct to his general practice,—thereby greatly annoying and interfering with his brethren possessing the highest possible qualifications, and charging their consultation fees.

A good deal of antagonism has consequently sprung up against the compounders of medicine being also medical practitioners, and the Apothecaries' Hall of Ireland, ever anxious for the good of the profession and the public at large, are now desirous of supporting a Bill, having for its object the advancement of pharmacy as a science, and chemistry as a profession, distinct from the medical qualification.

With this end in view, I believe it is wished that there should be an extension of the Pharmaceutical Society of Great Britain to the sister isle.

But there are one or two points of some interest, which have recently been discussed a good deal in the 'Irish Times,' namely, the position of certain gentlemen in Ireland calling themselves "druggists, oil and colourmen, etc.," their business depending on the mere sale of drugs, oils, colours, varnishes, wines, and numerous other sundries; but they covet the compounding of medicines in addition, and protest that it is part and parcel of their rights, which rights are tyrannically withheld from them by the monopoly of Apothecaries' Hall.

In the year 1745 the Hall obtained an Act of Parliament prohibiting all persons from dispensing medicines, unless they had first complied with the provisions therein made law, namely, tested practical examination in the various branches requiring previously a prescribed course of study.

From time to time these studies were increased until the present examination was founded, which is an acknowledged medical qualification. All are equally eligible to contest, having first gone through the prescribed course; and, provided the candidates acquit themselves creditably, they are received with open arms into the fellowship of the Apothecaries' Company.

What tyranny, then, can there be in asking all aspirants to honour to compete for the prize? for it would never do to entrust the responsibility of dispensing medicines in the hands of unqualified persons. The battle must be fought, if the victory would be won; and if the druggists of Ireland would only put their shoulders to the wheel, as thousands of others have done, they would find in their enlightened ideas greater liberality of sentiment and desire for knowledge, fitting them for the high standard they now without foundation assert to be a right. And did they for one month possess that so-called right, short of experience it must prove but a miserable failure, and a decided patronage of the retrogressive movement.

Pharmaceutical reform is now the universal demand, but let us not take a leap in the dark, by holding out concessions to any class of individuals short of the actual and prescribed course and test examinations, which are within the reach of all, but not to be obtained by any on the ground of rights, short of competition and fitness for possession of the topmost branch, whereon hangs the banner flaunting in the breeze, bearing the strange device, Excelsior!

Believe me, dear Sir, faithfully yours,

A LOVER OF, AND A WORKER IN, PHARMACY.

NOTES AND ABSTRACTS IN CHEMISTRY AND PHARMACY.

BY C. H. WOOD, F.C.S.

Solutions of Protoxide of Nitrogen.

M. Stanislas Limousin has published a long paper on protoxide of nitrogen, which presents several points of interest for pharmaceutists at the present time, because this gas has been a good deal employed recently to produce anæsthesia, more especially for dental operations.

After referring to the general history of the gas, M. Limousin states that in the course of some experiments in 1866, he was much struck by the great solubility of protoxide of nitrogen in water. Having one day a bottle containing equal volumes of the gas and cold water, he was surprised to find that upon violent agitation the stopper was forced down into the bottle with a detonation. Upon repeating his experiments he found the water (at about 4° or 5° C.) was capable of dissolving its own volume of the gas at the ordinary atmospheric pressure. This solution has a pleasant, slightly sweet taste, and is more agreeable to drink than pure water. It communicates this particular taste to wine and other liquids with which it is mixed. When the solution is effected under pressure, several volumes of gas are dissolved by the water, and this sweetness becomes more manifest. The author finds this solution of the gas to be perfectly innocuous; he has drunk it in doses of two bottles a day, sometimes pure, sometimes mixed with wine, and it has produced only a slight excitement and sensation of warmth to the head, somewhat similar to the effects of alcohol.

Dr. Demarquay has also studied upon himself the effects of this solution. He has taken it for several days, and he states that it produces upon the digestive functions a very marked stimulant and aperient action.

M. Limousin also directs attention to the solution of protoxide of nitrogen in ether. He finds that when ether is maintained at a temperature of −12° C. by a freezing-mixture, it is capable of absorbing eight times its volume of nitrous oxide. Prepared under these conditions, the saturated ether acquires remarkable properties. It volatilizes with so much greater rapidity than pure ether, and produces thereby such a diminution of temperature that it would probably produce very energetic effects if applied to produce local anæsthesia. A mixture of strong alcohol and ether saturated with protoxide of nitrogen, introduced upon cotton into a decayed tooth, produced momentarily an instantaneous disappearance of the pain. The vapour of this ethereal solution possesses a slightly sweet taste. Introduced into the lungs it produces a very agreeable peculiar sensation, and loses the sharp irritating taste of ether inhalations, which, with some persons, augments the nervous excitement.

M. Limousin also details a number of experiments intended to assist in forming an explanation of the physiological properties of nitrous oxide. He shows that this body is in fact a somewhat unstable compound, decomposed under comparatively feeble influences into oxygen and nitrogen; he regards it therefore as an oxidizing substance, and capable of acting as such when introduced into the animal economy. In the course of his paper the author mentions that bags or vessels of caoutchouc cannot be used for the preservation or transference of the gas, because this substance allows a very rapid diffusion of the gas to take place.

New Food for Infants.

M. Nestlé, of Vevey, has proposed the introduction of a new food for young infants, to which he gives the name *farine lactée*. This food is composed of perfectly pure milk, evaporated in a vacuum at a low temperature; of bread which has been submitted to a high temperature; and of sugar. These ingredients are incorporated in certain proportions, calculated to produce a food of similar composition to human milk. The preparation is made into the form of small granules of a yellowish-white colour. According to M. Barral, the food contains, in 1000 parts, 19·5 of nitrogen and 7 of salts. It results that, by diffusing 1000 parts of the food through 3000 parts of water, a milk is obtained which contains, in 1000 parts, 4·87 parts of nitrogen and 1·7 part of salts. Woman's milk contains 4·83 of nitrogen and 2 of salts; consequently, the two liquids are very nearly identical in the proportion of their elements.

M. Nestlé very justly observes that, for the nourishment of an infant, nothing can fully replace the milk of its mother; but where this natural food is unattainable, it should be imitated by something as similar in composition as possible.

Adulteration of Saffron.

An article in the 'Répertoire' describes a sample of adulterated saffron occurring in commerce. It was new, of a very rich colour, and of a fine appearance. The colour had been heightened by a little oil, but in other respects it might have passed as good and pure. Analysis indicated, however, that it contained a notable proportion of some pulverulent mineral matter adhering to the oily surface. One gramme, incinerated, gave 25 per cent. of ash, while an authoritative sample of pure saffron gave only 8 per cent. Exhausted by ether, and the solution evaporated, about 5 per cent. of fixed oil was obtained. Consequently, this sample of saffron contained at least 20 per cent. of foreign matter.

A New Cement.

The 'Journal de Chimie Médicale' states that an excellent cement may be made by dissolving 1 part of amber in 1½ part of sulphide of carbon. This liquid is applied by a brush to the surfaces it is wished to unite, and on pressing them together the cement dries almost immediately.

Liquid Fire.

It is well known that a solution of phosphorus in sulphide of carbon constitutes a very inflammable liquid, which, when spread over the surface of paper or other non-conducting fabric, is capable of spontaneous ignition. Such a solution has been called Greek fire, and more recently has received the name of Fenian fire. Chloride of sulphur may also be used to dissolve the phosphorus, but this solvent fumes strongly in the air, and the residue of phosphorus inflames less easily. M. Nickles, in a recent paper on the subject of Liquid Fire, describes a new method of inflaming the phosphorus solution. If some commercial chloride of sulphur be mixed with a solution of phosphorus in sulphide of carbon, a yellow liquid fuming in the air is obtained, which may be preserved in a closed vessel without danger. When ammonia is added to some of this liquid a lively deflagration takes place, accompanied by an intense voluminous flame which diminishes little by little, but lasts some time. The volatile alkali of commerce answers for the experiment perfectly, but it is advisable to make the operation in the open air, because of the acid vapours which are disengaged. At the first instant a jet of flame is produced which is soon replaced by a regular combustion of the sulphur and phosphorus. Two to three cubic centimetres of the liquid suffice to occasion a flame above a metre in height. M. Nickles names this experiment the *Feu lorrain*. The action of ammonia upon chloride of sulphur is somewhat complicated,—chloride of ammonium, sulphide of nitrogen, and several compounds of sulphide of nitrogen with chloride of sulphur, being among the products. The energy of the decomposition generates sufficient heat to cause the ignition of the phosphorus, which leads to the combustion of the entire liquid. It is advisable to add the ammonia from a phial tied to the end of a stick, and held at arm's length.

These solutions of phosphorus constitute somewhat dangerous liquids to preserve, and at the same time it might happen that it would be difficult to dispose of them with safety. M. Nickles therefore indicates a ready means for removing the phosphorus from solution in a harmless condition. If the phosphorus in sulphide of carbon be agitated with an excess of sulphate of copper, or with a solution of oxide of lead in potash or soda, the phosphorus is separated as a black precipitate of metallic phosphide, and the sulphide of carbon is deposited at the bottom of the liquid. If chloride of sulphur be present in the solution, it is also decomposed by the metallic solution.

In the course of his paper M. Nickles also refers to a fire suggested by M. Niepce de St. Victor. A closed phial partly filled with benzol, and containing a globule of potassium, is broken beneath the surface of water; the metal by contact with the water causes ignition, and inflames the floating hydrocarbon. M. Fontaine has proposed to replace the potassium in this experiment by phosphide of calcium.

Some new Substitution Products of Cellulose, etc.

M. P. Schutzenberger has recently succeeded in replacing a portion of the hydrogen in cellulose and in starch by acetyle, thus producing a series of bodies resembling pyroxylin and xyloidin in their chemical structure, but containing acetyle instead of peroxide of nitrogen. The change is effected by treating the organic body with acetic anhydride.

Cotton-wool or pure filtering-paper is treated with six or eight times its weight of anhydrous acetic acid, and heated to 180° C. for one or two hours. The solid substance completely dissolves, forming a thick dark syrup. Poured into water an abundant flocculent precipitate is obtained, which is washed with hot water and dried. This is soluble in glacial acetic acid forming a brown solution, which may be completely decolorized by animal charcoal. On again precipitating with water a white flocculent precipitate results, which, after it is washed and dried, constitutes pure acetic cellulose. Its composition is as follows:—

$$C_6H_7(C_2H_3O)_3O_5.$$

It is cellulose, therefore, in which three atoms of hydrogen have been replaced by acetyle. This body is insoluble in water, alcohol, ether, and benzol; soluble in glacial acetic acid and in oil of vitriol. When boiled with dilute alkalies, cellulose is regenerated and an acetate formed.

If a smaller proportion of acetic anhydride be employed, and the mixture subjected to a lower temperature, the cotton swells without dissolving, and derivatives containing only one or two atoms of acetyle (mono- or di-acetic cellulose) are obtained, which, however, cannot be purified on account of their insolubility.

The facility with which anhydrous acetic acid attacks starch varies much with the state of aggregation of this substance, and the proportion and purity of the anhydride. When the temperature does not exceed 140° F. the starch swells a great deal without dissolving. After washing a white amorphous substance is obtained, insoluble in water, alcohol, ether, and glacial acetic acid. It is not rendered blue by iodine, but is saponified by caustic alkalies with regeneration of the insoluble starchy matter, which then becomes blue with iodine. This substance is triacetic-starch.

$$C_6H_7(C_2H_3O)_3O_5.$$

If the temperature exceeds 150° F. the swollen mass dissolves, forming an amber syrup, from which water precipitates a white amorphous substance insoluble in water, alcohol, and ether, but soluble in glacial acetic acid. This substance is rapidly decomposed by dilute caustic alkalies, but forms a solution which, when carefully neutralized, is rendered blue by iodine, and from which alcohol precipitates a substance identical with ordinary soluble starch. There is, therefore, a triacetic derivative of soluble and also of insoluble starch, both having the same composition. By employing a still higher temperature for the reaction a derivative is obtained also triacetic, but from which alkalies regenerate dextrine instead of starch.

Glycogen heated to 155° with acetic anhydride furnishes an insoluble product, which is also a triacetic body:—

$$C_6H_7(C_2H_3O)_3O_5.$$

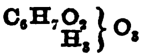
Gum arabic, finely powdered and heated to 150° with 2 parts of acetic anhydride, swells without dissolving, and yields an insoluble white powder, having the composition of diacetic-arabin:—

$$C_6H_8(C_2H_3O)_2O_5.$$

By employing an excess of the anhydride and a temperature of 180°, a body is obtained presenting similar characters, but having the composition of two molecules of arabin, in which 5 atoms of hydrogen are replaced by 5 of acetyle:—

$$C_{12}H_{15}(C_2H_3O)_5O_{10}.$$

On account of this latter reaction, M. Schurtzenberger is inclined to double the formula for arabin. He regards cellulose, starch, dextrine, and glycogen as isomeric triatomic alcohols, according to the formula—



$$\left.\begin{matrix} C_6H_7O_2 \\ H_3 \end{matrix}\right\} O_3$$

And considers the result of his researches as confirmatory of that view.

ACTION OF *VERATRUM VIRIDE* AND *V. ALBUM.*

Dr. Oulmont ('Neues Repertorium für Pharmacie,' 1868, Bd. xvii. Heft 3, p. 177) publishes some interesting observations and experiments made on man, dogs, rabbits, and frogs with *Veratrum viride*. When small, non-fatal doses were given to the lower animals, the symptoms were localized chiefly in the digestive, respiratory, and circulatory symptoms, and on the general force. In the digestive system they consisted of nausea, of vomiting, which sometimes lasted for twenty hours, and of diarrhœa. If doses sufficient to cause death were administered, these symptoms occurred in an excessive degree, but no signs of inflammation could be discovered. The respirations were powerfully affected at an early stage; they were sometimes unequal and irregular; they were sometimes diminished in number to two or even one in the minute; and in frogs they were sometimes altogether stopped. The rapidity of the circulation was soon diminished, the pulse being often reduced within fifteen minutes by from twenty to forty beats in the minute. The effect on the temperature was somewhat less marked. It falls two, three, or five degrees in from an hour and a half to two hours, and it may remain at this reduced point as long as twenty-four hours. The hyposthenic action is nearly immediately produced, and the weakness and sinking of the general force are prominent effects of large doses; but even when these are sufficient to cause death neither muscular stiffness nor convulsions ever occur. The latter symptoms, however, are the special characteristics of the action of veratria. For the purpose of comparison, Oulmont examined the action of *V. album*. He found that it is distinguished from that of *V. viride* by the greater violence of its effects on the digestive system, where it always produces inflammatory lesions, and by the greater rapidity of its action. Finally, the action of the alkaloid veratria was investigated with the somewhat unexpected result that it is not the true active principle of veratrum. Some *V. viride* was completely freed from the alkaloid, and an ordinary dose given to an animal; the effects were in all respects the same as those of the usual preparation. Oulmont concludes that *V. viride* is a cardiac poison analogous to *Digitalis*, from which it is distinguished by its extraordinary rapidity of action. The investigation is of special interest as, until now, a considerable amount of uncertainty has existed as to its exact physiological action.—*Amer. Journ. of Pharmacy, from Journ. Anat. and Phys.*

HYOSCYAMUS, OR HYOCYAMUS?

Hanne-bane; Hyocyamus.—Here are two words, says Mr. De Morgan, 'Athenæum, August 21st, wrongly spelt according to our notions. Our English word *henbane* is supposed to indicate a plant which is fatal to domestic fowls; but nobody makes out that the hens ever eat it. In Gerard's 'Herbal' (1597) *hanne-bane* is given as the only French word for what they now call *jusquiame*, from the Italian *jusquiamo*. In the Academy's dictionary *hane-bane* and *hene-bane* are given as obsolete forms, for which reference is made to *jusquiame*. Neither *hanne* nor *bane* has separate recognition from the Academy, nor does either occur in any compound except one, so far as I can find. It may be suspected that a form of the old word is seen in that "hebenon" with which the Danish Cain murders his brother. The Greek word means *hog-bean*. Now, *ὑο* is the crude form of *hog*, and *κυαμος* is *bean;* hence *ὑοκυαμος* (hyocyamus) should be the word: analogous with *ὑοπολος*, *ὑοειδῆς*, etc. The common form *ὑοσκυαμος* (hyoscyamus), with the full genitive *ὑος*, is just such a word as we see in horses-radish, cow's-heel, gooses-berry, etc. It is true that the insertion may only be intended to avoid a number of short syllables coming together, as seems to be done in *ὑσπολος*, etc. But we need not preserve what to a Greek ear was only euphonic, to the confusion of etymology. It would surely be desirable to write *hyocyamus.*

STANDARDS COMMISSION.—SECOND REPORT.

To the Queen's Most Excellent Majesty.

May it please your Majesty,—We, the Commissioners appointed under your Majesty's Royal warrant dated the fourth day of May, 1868, for inquiry into the condition of the exchequer standards (now called the Board of Trade standards, or the official standards) of length and weight, and for other purposes therein set forth, acting under the directions to us contained in the said warrant to report to your Majesty from time to time the result of our inquiries, humbly offer to your Majesty our Second Report.

1. In closing their First Report, submitted to your Majesty under date of 24th July, 1868, the Commission adverted to the metric system, and especially to the probable effect of attempting to introduce it into this country. The subject appeared to enter legitimately into their consideration, inasmuch as the introduction of a new system would imply addition to the existing Board of Trade standards, to which (among other things) the inquiries of the Commission are by your Majesty's royal warrant specially directed. And the Commission expressed their sense of the great importance of the question, and undertook to give to it their early and careful attention.

2. In their desire to redeem this pledge, the Commission have thought it advantageous to confine themselves in this their Second Report to the questions connected with the metric system, deferring to a later Report all allusion to the various points connected with the proceedings of the Standards Office, and with the British law and its administration, relating to the imperial system of weights and measures.

3. It appears to the Commission that the reasons which may be urged for or against the introduction of a new system will naturally arrange themselves under two heads: namely, those which relate to the internal commercial transactions of the country, and those which relate to transactions with other countries. It is proposed here to consider the subject in that order.

4. With reference to the question as bearing upon internal commerce, the Commission have thought it desirable to examine into the reasons assigned for changes of system in other countries, and, if possible, to ascertain the results of their experience; and to inquire whether similar reasons apply, and what may be anticipated as the effect of change in this country.

5. As regards the first of these trains of inquiry, the Commission have derived most valuable information from official papers of other countries, transmitted either directly, or through the Board of Trade, to the Warden of the Standards, and by him communicated to the Commission. The information thus laid before them is appended to the Report. Among these documents, the most important are those of France, the United States of North America, North Germany, Switzerland, and India. As regards the second inquiry, the Commission have had before them the evidence collected by preceding Standards Commissions, and especially that which was heard by a Committee of the House of Commons in the year 1862; they have also had the results of their own personal experience, both in matters of science and in transactions of daily life.

6. The Commission remark that in the statements introductory to the proposals for new systems in France, North Germany, and India, very great stress is laid upon the discordance in the fundamental units of their customary weights and measures, as adopted in different districts of the same empire. These reasons have no force in Great Britain and Ireland, throughout which, whatever difference may prevail as to the multiples in local use, the fundamental units,—namely, the yard, the pound, the gallon,—are strictly the same; based upon national standards which are constructed with the utmost skill and care, and supported by a system of inspection which, though chargeable with imperfections (to which the Commission at present advert no further), is on the whole efficient. The Commission also remark that, in the introduction of the new system into Switzerland, it appears to have been rather the object of the proposers to define accurately the relation of their standard to the French standard, than to adopt the metric system; thus, the Swiss foot is defined to be three-tenths of the metre, a proportion which seems to be irreconcilable with the practical adoption of a decimal scale.

7. On the results of the introduction of the metric system, as matter of experience, it is difficult to give a certain statement. The great mass of people in France undoubtedly adopt it, both in the names and in the values of the weights, measures, and coins; although such names as the *livre* and the *sou*, for the half-kilogram and the piece of 5 centimes, are still in common use. In Holland and other neighbouring countries the metric system, though very generally adopted, is, it is believed, still less perfectly introduced.

8. In the United Kingdom, so far as can be conjectured, the existing imperial system has, in its main features, grown up spontaneously among the people, and the action of

the Legislature has been limited to such practical measures as the following: the giving certainty and precision to the fundamental standards, the establishment of accurate and more simple relations among systems which at first probably had no connection (as those of the *stone* and the *pound*), and, in some instances, the abolition of measures, etc., which, while bearing the same name, had slightly different values (as the various gallons). If this conjecture be correct, it tends to prove that the existing system meets the popular wants, and that it will not easily be expelled from popular use.

9. There is good reason to believe that in large factories a decimal division is frequently convenient, and in many cases, for commercial reasons, the most convenient base for that division is the metric. The owners of those factories can, however, arrange such matters to a great extent, without legislative assistance. But for sales in shops, which specially require the care of the Legislature, and for ordinary work, other considerations apply. Different bases must be adopted; for instance, the yard is a very convenient length for drapers' measure, but the foot is far more convenient for carpenters' measure. It has been remarked that the last or coomb, the bushel, and the peck, are well suited for men's backs, arms, and hands. The natural inclination of the mind to halve and quarter continually exhibits itself in the subdivision of almost every base; thus, in avoirdupois weight and in measures of capacity, the progressive halving of the pound and bushel, and their lower denominations, is continued nine times, and the binary subdivision extends to $\frac{1}{512}$. The metric system does not offer the same facility either for change of the adopted base, or for the continued binary subdivision; and any attempt to force it into use in shops, and into workmen's operations, and their accounts, would probably be felt as a needless grievance.

10. The Commission are obliged to remark here that the evidence as to the feeling of the great class of vendors in shops and ordinary tradesmen is rather of an inferential than of a positive character. Among the witnesses examined by the Committee of the House of Commons which sat in 1862, there is not one shopkeeper, and scarcely one person of the lower working class. The evidence collected by the preceding Standards Commissions cannot fairly be cited now, as the question of introducing the metric system into this kingdom had then hardly been raised. But the Commission cannot omit to call attention to the distinct though negative fact, that not a single movement has been made on the part of shopkeepers or workmen for procuring a change, and not a single complaint has been made by them of the existing legal system of imperial weights and measures.

11. It is obvious that in this country, where the people are more accustomed to self-government than in other European countries, the executive has far less power of compelling obedience to the law in all the small transactions of trade, against the wishes of the public. Should an attempt be made at the present time to introduce the metric system by legal compulsion, the Commission regard it as certain that very great confusion would be produced, and they think it highly probable that the attempt would be met by such an amount of resistance, active and passive, that it would totally fail.

12. At the same time, the Commission remark that the want of weights and measures on a decimal scale generally, or on the metric scale specifically, is not unfrequently felt by the manufacturing and trading classes, and more especially by men of science, and by chemists and engineers of the highest class; and that it appears scarcely possible to satisfy this want, and to place the metric system on the footing which it seems justly to claim, except by the legal establishment of metric standards and of inspectors' standards (where required), and by the legal sanction of the use of metric weights and measures in shops and in offices of conveyance. But such permission, unless very carefully guarded, would lead to the most intolerable and enduring confusion, and the Commission expressly state their opinion that any enactment giving permission to use metric weights and measures for public sales and conveyance must be accompanied with such provisions for their form or other characteristics as will make it impossible to mistake them for weights and measures of the existing imperial system. With very careful attention to these provisions, the Commission see no objection to the permissive introduction of weights and measures on the metric system into shops and offices of conveyance, provision being also made for inspectors' standards and powers of inspection where required.

13. With the view of further lessening any confusion that might be occasioned by the addition of a new series of weights to those now existing of the avoirdupois and troy

scales, the Commission have had under their consideration the question of the discontinuance of troy weight. They refer to the opinions expressed by the Standards Commission of 1841 and 1854 in favour of the simplification of the British system of weights by the abolition of the troy scale. Apothecaries' weight based on troy weight has since been legally discontinued under the authority of the Medical Act, 1858, and avoirdupois weights have been substituted in the dispensing of medicines. Much of the difficulty of the discontinuance of troy weight is thus removed, its use being now limited to manufacturers of and dealers in gold and silver wares and bullion. Still these form a numerous class, and the Commission feel that they cannot make any definite recommendation for abolishing troy weight, without having first inquired extensively into the practice and feelings of persons who now use that system. The assay of the precious metals, the ascertaining the standard of gold and silver, the operations of coinage, and the levying the duty on gold and silver plate, all are now based by statute on troy weight; and in the event of its abolition, it will become necessary to make further provision by law for the weights to be used for these purposes. It may also be a matter deserving consideration how far it may be expedient to substitute metric weights. The Commission will give their careful attention to these points, and the results of their labours must be deferred to a future Report.

14. Passing now to the consideration of our transactions with foreign countries, the Commission express their full belief that the foreign commerce of this country, especially with France, and with other countries which have introduced, or propose to introduce the metric system, has in late years increased much more rapidly than the home trade, though in what proportion it is difficult to ascertain. But, great as that foreign commerce undoubtedly has become, it is small in comparison with the home trade. From the report of the Postmaster-General in the year 1864, it appears that the number of foreign letters (requiring apparently to be doubled for proper comparison of the number of transactions) was about $\frac{1}{30}$ of the number of home letters. If we refer to the accessible returns relating to money transactions, the amount of stamp-duty levied on foreign bill-stamps, about £350,000 annually, implies foreign transactions to the amount of about £600,000,000; while the amount of cheques and bills passed at the London Clearing House (in which many of the London bankers take no part) is about £3,300,000,000; and the transactions in the manufacturing districts and the interior of the country generally multiply this in an unknown ratio. Still, the existence of this large foreign trade is an argument for the permissive adoption of the system which agrees with that of so many of our foreign trade correspondents. And great advantage will evidently be introduced, unaccompanied (so far as can be remarked) with any bad effects, by giving the ordinary statistical publications relating to foreign trade, and in some instances to home trade also, on the metric as well as on the imperial system.

15. As bearing upon all parts of this inquiry, the Commission think it their duty to call attention to the advantage of establishing in this country a decimal system of coinage. The decimal division gives the greatest facilities for the gradation of prices, and for the great number of additions, multiplications, and divisions continually presenting themselves in money affairs, but more rarely occurring in the combination of the several denominations of weights and measures. And the Commission think it probable that extensive familiarity with decimal coinage would materially tend to facilitate the introduction of a decimal scale of weights and measures, where it can be useful. The Commission do not disguise their apprehension that a chainge of coinage would produce for a time some confusion. At the same time they observe that it is absolutely in the power of the Government to effect the change without any risk that the resistance which might be made by those who preferred the old system could ultimately prevail against it.

16. Guided by the preceding considerations, the Commission have unanimously agreed upon the following resolutions:—

(1.) Considering the information which has been laid before the Commission,—

Of the great increase during late years of international communication, especially in relation to trade and commerce;

Of the general adoption of the metric system of weights and measures in many countries, both in Europe and other parts of the world, and more recently in the North German Confederation and in the United States of America;

Of the progress of public opinion in this country in favour of the metric system as a uniform international system of weights and measures;

And of the increasing use of the metric system in scientific researches, and in the practice of accurate chemistry and engineering construction;

We are of opinion that the time has now arrived when the law should provide, and facilities be afforded by the Government, for the introduction and use of metric weights and measures in the United Kingdom.

That for this object, metric standards, accurately verified in relation to the primary metric standards at Paris, and deposited in the Standards Department of the Board of Trade, should be legalized; and that verified copies of the official metric standards should be provided by the local authorities for inspectors of such districts as may require them.

(2.) Considering the advantages of adopting an international system not only of uniform weights and measures, but also uniform names; and that although there may be well-founded objections to the inconvenient length and occasional similarity, both to the eye and ear of the French nomenclature, yet it is probable that these names will become familiar by custom, and obtain popular abbreviations;

We think that the French nomenclature, as well as decimal scale of the metric system, should be introduced in this country.

(3.) Considering,—

That there is no immediate cause requiring a general change in the existing system of legal weights and measures of the country for the purposes of internal trade;

That the statutable values of the fundamental imperial units are adopted in use without the slightest variation throughout the whole of the British Isles;

That the primary imperial standards are as perfect as can be made by modern skill and science, and that the whole series of official standards are now most accurately verified in relation to the primary standards;

That a very large number of copies of the official imperial standards, accurately verified, are now in use by the local inspectors of weights and measures;

That it is estimated there are nearly 80 millions of ordinary weights and measures of the existing imperial system now in common use;

That at the present time there is no evidence to show that any considerable portion of traders and their customers in this country are dissatisfied with the imperial system now in use, or that they desire to substitute the metric system for it;

We are of opinion that the general introduction of the metric system should be permissive only, and not made compulsory by law after any period to be now specified, so far as relates to the use of metric weights and measures for weighing and measuring goods for sale or conveyance.

(4.) Considering that during the concurrent use of the metric and imperial systems, it will be expedient to prevent, as far as possible, imperial and metric weights and measures from being accidentally or fraudulently substituted for each other;

We are of opinion that authoritative regulations should be established under which each series may be readily and easily distinguished, by the adoption of conspicuous distinctive forms or marks for the several weights and measures, and by such other mode as may be determined upon after due inquiry.

(5.) We are of opinion that it is expedient that customs duties should be allowed to be levied by metric weight and measure, as well as by imperial weight and measure; that the use of the metric system, concurrently with the imperial system, should be adopted by other public departments, especially the Post Office, and in the publication of the principal results of the statistics of the Board of Trade, as well as for the admeasurement and registration of the tonnage of shipping;

(6.) And that mural standards of the metric system, as well as of the imperial system, be exhibited in public places.

(7.) Considering,—

That the metric system, as adopted in other countries, includes the relation of coinage to weights and measures, particularly in its uniform decimal scale;

And that the advantages of the introduction of the metric system into this country, as an international system of weights and measures, would be much increased by establishing a corresponding international system of coinage, in regard to a unit and to a decimal scale;

We are of opinion that, even if the difficulties of establishing an international unit of coinage cannot be at present overcome, yet the decimalization of our system of coinage, which is in the power of the Government, would be very useful to the public.

(8.) Considering the great national importance of the question of the introduction of the metric system of weights and measures into this country,—

It appears to us essential that any measure for this object should be proposed to Parliament by the Executive Government.

(9.) Considering that the Commission will very shortly enter upon the questions referred to them relating to the system of local inspection of weights and measures throughout the United Kingdom,—

We are of opinion that it is expedient that no legislation should take place with respect to the metric system until the whole subject of the weights and measures of this kingdom be brought before Parliament in one Bill.

All which we humbly submit to your Majesty.

G. B. Airy, *Chairman.*
Colchester.
Stephen Cave.
John George Shaw Lefevre.
Edward Sabine.
Thomas Graham.
W. H. Miller.
H. W. Chisholm.

7, *Old Palace Yard, April 3rd,* 1869.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The thirty-ninth meeting of the Association was opened at Exeter, on Wednesday, August 18th. The first meeting was one of the general committee, and was held in the Albert Memorial Museum at one o'clock; Dr. Hooker, the President of the last year's meeting, in the chair. The various reports were presented, and the sectional officers and a committee of recommendation were appointed. Mr. Webster, Q.C., gave notice that, at the next meeting of the committee, he would move a resolution to the effect, that towns which the Association decided to visit should have a voice in the election of President for the year; he was of opinion that in certain neighbourhoods there were men of high position in the State whom it might be desired by the local hosts and others to have as President. The Presidency, he considered, ought not always to be confined to men of science.

At eight o'clock in the evening, Dr. Hooker having resigned the chair, the new President, Dr. G. G. Stokes, Lucasian Professor of Mathematics at Cambridge, delivered the address.

The officers of the Chemical section were:—

President.—Dr. H. Debus.

Vice-Presidents.—Dr. Andrews, Dr. Gladstone, Dr. W. A. Miller, Dr. Voelcker, Dr. Williams.

Secretaries.—Professor A. Crum Brown, Dr. W. J. Russell, Dr, Atkinson.

Committee.—Dr. J. Attfield, F. Braby, H. B. Brady, J. S. Brazier, Professor Bauer, J. C. Brough, C. Calvert, M. Carteighe, Vernon Harcourt, M. Janssen, Professor Jacobi, Dr. Stevenson Macadam, H. Matthews, H. M'Leod, Professor Magnus, Professor Morren, Dr. A. Oppenheim, Dr. B. Paul, Dr. T. L. Phipson, Dr. T. H. Rawney, R. Reynolds, C. Roberts, H. E. Roscoe, M. Salet, J. Smyth, jun., P. Spence, E. C. C. Stanford, W. Thorp, C. Tomlinson, W. Weldon, Rev. S. Williams.

The papers read in this section were:—

The President's Address. Herbert M'Leod—Report on the Determination of the Gases existing in Solution in Well Waters. A. Matthiessen—Report of the Committee on the Chemical Nature of Cast-Iron. M. Jacobi—On Electrolytic Iron. J. Moffat—On the Phosphorescence of the Sea and Ozone in connection with Atmospheric Conditions. J. Moffat—On the Oxidation of Phosphorus and the quantity of Phosphoric Acid excreted by the Kidneys in connection with Atmospheric Conditions. C. Tomlinson—On a Remarkable Structural Appearance in Phosphorus. B. H. Paul—Report on Treatment and Utilization of Sewage. F. Braby—On Extraction of Ammonia from Gas Liquor. Stevenson Macadam—On the Economic Distillation of Gas from Cannel Coal. Walter Weldon—On the Manufacture of Chlorine by means of Perpetually Regenerated Manganite of Calcium. T. L. Phipson—On some New Substances extracted from the Walnut. T. L. Phipson—On the Solubility of Lead and Copper in Pure and Impure Water. W. J. Russell—On the Measurement of Gases as a Branch of Volumetric Analysis. C. Tomlinson—On the Supposed Action of Light on Combustion. Crace Calvert—On the Amount of Soluble and Insoluble Phosphates in Wheat Seed. H. Sorby—On Jargonia. S. Williams—On the Action of Phosphoric-chloride on Hydric-sulphate. J. Dewar and G. Cranston—On some Reactions of Chloro-sulphuric Acid. A. Matthiessen and C. R. Wright—On the Action of Hydrochloric Acid on Morphia and Codeia. Dr. Andrews—On the Absorption Bands of Bile. M. Janssen—Méthode Spectrale pour la Recherche des Composés du Sodium. M. Janssen—Sur Spectre de la Vapeur d'Eau. W. C. Roberts—On a Specimen of Obsidian from Java. W. D. Michell—Are Flint Instruments of the First Stone Age found in the Drift? E. C. C. Stanford—A Chemical Method of Treating the Excreta of Towns. H. Bamber—On the Water Supplies to Plymouth, Devonport, and Exeter. P. Spence—On the Production of Higher Temperatures by Steam of 212° F. A. Oppenheim—On Bromo-Iodide of Mercury. A. Oppenheim—On Benzo-Sulphuric Acid. Professor Jellett—On a Method of Determining with Accuracy the Ratio of the Rotating Powers of Cane Sugar and Inverted Sugar. Dr. Fritsche—Notes on Structural Change in Block Tin,—communicated by W. C. Roberts. H. Cooke—On the Registration of Atmospheric Ozone in the Bombay Presidency, and the Chief Causes which Influence its Appreciable Amount in the Atmosphere. J. Lowthian Bell—On the Decomposition of Carbonic Oxide by Spongy Iron.

AMERICAN PHARMACEUTICAL ASSOCIATION.

SEVENTEENTH MEETING.

The first meeting of this Association held in the West, assembled at Chicago, on Wednesday September 8th, in the Hall at Lombard Block. The delegates were composed of the most distinguished chemists and druggists in America. The first proceedings consisted of a business session in the afternoon, and a reception in the evening. An exposition connected with the convention comprised a fine collection of chemicals, chemical and pharmaceutical apparatus and appliances, the large chemical laboratories and manufactories being well represented, and most European countries had specimens on exhibition. The officers of the Association which is composed of more than 1000 members, are—

President.—E. Parrish, Philadelphia.
Permanent Secretary.—J. M. Maisch, Philadelphia.
Local Secretary.—H. W. Fuller, Chicago.
Treasurer.—C. A. Tufts, Dover, N.H.

The attendance was large, and the following were present:—

Massachusetts College of Pharmacy.—Delegates, S. W. Colcord, Ashael Boyden, George T. H. Morkoc, Isaac T. Campbell, S. A. D. Sheppard.

New York College of Pharmacy.—Delegates, P. W. Bedford, Isaac Coddington, William Hergowd, A. W. Weismann, William Wright, jun.

Philadelphia College of Pharmacy.—Delegates, J. S. Shinn, S. M. M'Collin, Wilson A. Pile, William Proctor, Alfred B. Taylor.

St. Louis College of Pharmacy.—Delegates, W. H. Crawford, J. C. Kirkbride, F. X. Crawley, F. W. Lennewald, James M'Bride.

Kansas College of Pharmacy.—Delegates, H. S. Greene, A. Brennent, R. Parkham, George Leis, R. J. Brown.

Cincinnati College of Pharmacy.—Delegates, R. J. Miller, George B. M'Pherson, W. H. Ashley, W. J. M. Gordon, W. S. Merrill.

Saginaw Valley Pharmaceutic Association.—Delegates, W. Mall, D. Simoneau, S. S. Garrigus, J. E. Taylor, J. F. Street.

Chicago College of Pharmacy.—Delegates, Albert E. Ebert, F. Mahla, James W. Mill, G. W. Hambright, Thomas Whitfield.

Alumni Association of Philadelphia College of Pharmacy.—Delegates, R. M. Shoemaker, Charles L. Jefferson, E. C. Jones, W. C. Baker, W. H. Racer.

The Chairman of the Executive Committee was then called upon to report the names of those who had handed in their credentials, which were approved. The gentlemen proposed as members, sixty-two in number, were unanimously elected. The Reports of Committees were then proceeded with. In the Bill proposed at the last convention for the consideration of members, and to be presented to the next legislature, provided the members favour the same, the preamble provides that—

Whereas, the safety and welfare of the public is endangered by the sale of poisons by unqualified or ignorant persons; and

Whereas, in all civilized countries it is found necessary to restrict this species of traffic, and to provide by law for the regulation of the delicate and responsible business of compounding and dispensing the powerful agents used in medicines; and

Whereas, the adulteration and sophistication of drugs and medicines is a species of fraud which should be prevented and suitably punished; therefore be it enacted,

1. That medicines and poisons be dispensed only by registered pharmacists; 2, that no person can become a registered pharmacist unless a graduate in pharmacy, a practising pharmacist, or assistant; 3, definition of the term "Pharmacist;" 4, the constitution of a Pharmaceutical Board, of which the Governor shall appoint seven; 5, duties of the Board; 6, the appointment of a regular registrar of pharmacists; 7, his duties; 8, the registration of pharmacists; 9, penalties for collusion; 10, penalty for non-registration; 11, restrictions on sales of poisons; 12, dispensing of prescriptions; 13, adulteration of medicines, and the penalty; and appended thereto schedules and forms for the most complete carrying out of the Bill.

The Bill goes over for consideration.

AN ACT TO PROHIBIT FOR A LIMITED PERIOD THE IMPORTATION, AND TO RESTRICT AND REGULATE THE CARRIAGE, OF NITRO-GLYCERINE.

32 & 33 VICT. c. 113.

Whereas the carriage and conveyance of nitro-glycerine has been found to be attended with great risk and danger to the lives and property of her Majesty's subjects, and it is desirable to restrict and regulate such carriage, and in particular to prevent the mischief which might arise from explosions in the removal and landing of nitro-glycerine from ships, and for that purpose to prohibit the importation thereof:

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Short title.

1. This Act may be cited for all purposes as "The Nitro-Glycerine Act, 1869."

Interpretation of terms.

2. In the interpretation of this Act—

"Nitro-glycerine" means the substance called or known by that name, or as glonoine oil, and this Act extends to every substance having nitro-glycerine in any form as one of its component parts or ingredients in the same manner as if it were nitro-glycerine:

"Court" includes any justices, sheriff, or magistrate exercising jurisdiction under the powers of this Act:

"Person" includes body corporate.

Prohibition of importation and exportation of nitro-glycerine.

3. Save as hereinafter mentioned, no person shall, after the passing of this Act, bring into any port or harbour of the United Kingdom, or ship or unship on, from, or near the coasts of any part of the United Kingdom, any nitro-glycerine.

If any person acts in contravention of this section, he shall be guilty of a misdemeanour, and shall, at the discretion of the Court, be liable to be imprisoned, with or without hard labour, for any term not exceeding one year, or to pay a penalty not exceeding five hundred pounds; and all nitro-glycerine brought into any port or harbour, or shipped or unshipped in contravention of this section shall be forfeited.

If it is shown to the satisfaction of one of her Majesty's principal Secretaries of State that any substance having nitro-glycerine in any form as one of its component parts or ingredients can safely be brought into any port or harbour of the United Kingdom, or be safely shipped or unshipped on, from, or near the coasts of any port of the United Kingdom, he may by general or special licence authorize the introduction or exportation of such substance into or from the United Kingdom on such conditions as he thinks expedient.

No penalty shall be inflicted in pursuance of this section on any person bringing nitro-glycerine into any port or harbour of the United Kingdom who proves to the satisfaction of the Court before which he is tried that he was driven into such port or harbour by stress of weather, that with as little delay as possible he gave notice to the authorities having jurisdiction in such port or harbour of the arrival of the ship bringing nitro-glycerine, and that he conformed to any directions which may have been given him by such authorities.

Regulation as to the manufacture, sale, and carriage of nitro-glycerine.

4. No person shall, after the expiration of four weeks from the passing of this Act, manufacture, sell, carry, or otherwise dispose of, or have in his possession any nitro-glycerine in any part of the United Kingdom, except in accordance with a general or special licence issued by one of her Majesty's principal Secretaries of State; the said Secretary of State may annex any absolute prohibitions or any restrictions to any licence granted by him in pursuance of this Act, limiting the manufacture, sale, carriage, disposal, or storage of nitro-glycerine to particular persons, and to particular places, and for particular purposes, or otherwise prohibiting or restricting the manufacture or use thereof in such manner as he thinks fit; he may also, in any case where he allows nitro-glycerine to be carried, prohibit the carriage thereof along any public way, and add restrictions as to the persons by whom, the mode in which, the places from and to which, and the quantity in which any nitro-glycerine is to be carried, and generally may make such provisions and restrictions, whether relating to the matters aforesaid, or any of them, as he thinks fit for the protection of the public against the danger arising from the manufacture, sale, carriage, disposal, or storage of nitro-glycerine.

If any person manufactures, sells, carries, or otherwise disposes of or has in his possession any nitro-glycerine without a general or special licence in pursuance of this Act, he shall be guilty of a misdemeanour, and shall in the discretion of the Court be liable to be imprisoned, with or without hard labour, for any period not exceeding one year, or to pay a penalty not exceeding five hundred pounds.

The said Secretary of State may annex to the breach of the conditions of any licence granted by him any punishment or penalty, not being greater than the punishment or penalty to which a person manufacturing, selling, carrying, disposing of, or having in his possession any nitro-glycerine without a general or special licence is made liable by this Act; and any pecuniary penalty so annexed may be recovered summarily if it does not exceed one hundred pounds.

Provided that no penalty shall be inflicted in pursuance of this Act on any carrier, wharfinger, or warehouseman, who satisfies the Court that after using all due precautions the nitro-glycerine was carried by him, or was in his possession without his knowledge.

Provisions as to persons having nitro-glycerine in their possession at the commencement of the Act.

5. Every person having any nitro-glycerine in his possession at the time at which this Act is passed shall give notice thereof in writing to the said Secretary of State, stating such particulars in relation to the quantity, storage, and otherwise as the said Secretary of State may require; and the said Secretary of State may thereupon make such order in respect to the disposal thereof, as he thinks just.

Any person failing to give such notice as required by this section will be subject to the same punishment and penalty to which a person manufacturing, selling, carrying, disposing of, or having in his possession any nitro-glycerine without a licence is made liable by this Act.

6. Nitro-glycerine may be searched for in the same manner, under the same warrants, and subject to the same conditions in, under, and subject to which gunpowder may be searched for in pursuance of the Act of the session of the twenty-third and twenty-fourth years of the reign of her present Majesty, chapter one hundred and thirty-nine; and all the provisions of the said Act relating to searching for gunpowder are hereby incorporated with this Act, and shall, for the purposes of this Act, be construed as if the word "gunpowder" in such provisions included nitro-glycerine as defined by this Act, and as if the Act therein referred to were this Act, and those provisions shall be construed to extend to nitro-glycerine imported or sold contrary to this Act. Search for nitro-glycerine.

PROSECUTION UNDER THE ARSENIC ACT.

In the case, briefly noticed in our last number, in which Mr. Lister, a grocer at Church Stretton, was charged, on the information of Mr. Phillips, Chemist, with selling arsenic ("Cooper's Sheep-dipping Powder"), contrary to the Act, the decision of the magistrates has been given. The Bench decided on dismissing the summons, being of opinion that the coloured preparations of arsenic did not come within the meaning of the Act. Costs of the summons to be paid by the complainant, and the costs of the adjournment to be paid by Mr. Cooper, who defended the case for his agent.

CASES OF POISONING—ACCIDENTAL AND CRIMINAL.

Alleged Poisoning.—Charles Gritt, who was reported in our last number as having poisoned Miss Emily Collier, was brought before the Coroner at Newport, when further evidence was given. It appears that after eating some of the wheat given to her by the prisoner, the little girl, finding that it tasted nasty, told her mother, who had the remainder of the wheat thrown into the fire, and it was observed to burn with a blue flame. Soon after eating the wheat, the child became ill, and the following symptoms were observed,—vomiting and twitching about the mouth. Dr. Brewer was called in, but before he arrived, the lower jaw had become fixed. The prisoner was discharged from Mr. Collier's service, and subsequently wrote a confession that what he had given to Miss Collier was poisoned wheat. On Friday, Sept. 3rd, the inquiry was resumed, when a communication was read from Dr. Taylor to the effect that he had analysed the whole of the stomach, the greater part of the intestines, one-half of the liver, one kidney, the spleen, one-half of the heart, and one-fourth of the lungs, all of which were submitted to the usual tests and processes for the detection of mineral and vegetable poison, with the result that no trace of poison was found in any one of these organs. Dr. Taylor laid particular stress on the length of Miss Collier's illness, as being opposed to the theory of death having resulted from poisoning; for if she had been given strychnia, arsenic, etc., or any of the more active poisons, death must have followed in a few hours. The jury expressed a wish that the remainder of the organs should be entrusted to Dr. Letheby for analysis, and the Coroner agreed to convey their wish to the proper quarter. The inquiry was accordingly adjourned.

This case was resumed on Thursday, Sept. 16th, when the prisoner was examined as to the written confession he had previously made. He stated that he wrote the paper in question for the purpose of getting a character; and that there was no truth whatever in the statement there made, to the effect that he had poisoned Miss Collier. The report of the analysis of Dr. C. M. Tidy, of the London Hospital, to whom the case had been referred, was read. It was to the effect that no poison whatever had been discovered. The following verdict was given, "The jury are of unanimous opinion that there is no evidence to prove that Miss Emily Amelia Collier came to her death otherwise than naturally, from inflammation of the membranes and substance of the brain."

Poisoning by Strychnia.—An inquest was held on Wednesday, September 8th, by Mr. M. B. Carter, at Cinderford, in the Forest of Dean, on the body of Mrs. Jane Salter, aged 54, wife of the Rev. Edward Salter, of St. Jude's Church, Bristol. Mrs. Salter in 1864 showed signs of insanity, having attempted to commit suicide both by drowning and by poison. She had been placed in an asylum, but in a short time, appearing to be quite well, she went to live with her mother, and in November last returned to her husband. At the time of her death Mrs. Salter was with Mr. Salter on a visit to Dr. Whatmough, at Cinderford; and on the night of September 1st she retired to bed apparently happy and comfortable. Early in the morning Mr. Salter was awakened by his wife's hard breathing, and, asking what was the matter, she requested water and complained of cramp; immediately violent convulsions came on. Dr. Whatmough was called, who found Mrs. Salter suffering from tetanus. The doctor went to his surgery, but before he could return she was dead. A *post-mortem* examination was made, and the contents of the stomach analysed by Mr. Horsley, of Cheltenham; and, although no traces of the poison could be found, it was the opinion of three medical men that Mrs. Salter died from tetanus caused by strychnia; and the jury found accordingly, but under what circumstances the poison was taken, there was no evidence to show.

REVIEWS.

Das Chloralhydrat ein neues Hypnoticum und Anaestheticum und dessen Anwendung in der Medicin—eine Arzeneymittel-untersuchung von Dr. Oscar Liebreich, Chem. Assistent am Patholog. Institut, Privatdocent d. Heilmittellehre und Medicin. Chemie a. d. Universität zu Berlin. Berlin 1867. 8vo. pp. 60.

The principal portion of this pamphlet is devoted to an account of experiments made in order to determine the effects of chloral upon animals, and to a report of trials made of it upon the human subject in the Berlin hospitals. From these investigations we gather that the action of chloral is very closely analogous to that of chloroform, and we are unable to perceive that its effects are manifestly superior. It is true that it admits of being administered by subcutaneous injection, and that in this manner it may sometimes advantageously replace morphia. It has proved also to be a very powerful sedative in *delirium potatorum.*

Though we have spoken of chloral, it is to be understood that the *hydrate,* called by the author *Hydras Chlorali,* is the substance which has been employed. Chloral itself is a liquid,—the hydrate a colourless solid, crystallizing in fine needles, which fuse together into a crystalline mass. If a little of the hydrate be placed at the bottom of a bottle it will gradually sublime on the sides in slender acicular crystals. It is completely soluble in water, but after long keeping the solution exhibits a slight opalescence. The solution is neutral and is not precipitated with nitrate of silver. If the crystals are treated with oil of vitriol, a colourless oily layer will form on the surface and will speedily solidify. Treated with caustic potash, the aqueous solution exhibits a milky turbidity which disappears after some minutes, and drops of chloroform are then seen to have been deposited at the bottom of the vessel. Both hydrate of chloral and its solutions should be kept in well-closed glass-stoppered bottles.

Hydrate of chloral cannot properly be administered either in the form of pill or powder, but only in solution. For its exhibition internally, Dr. Liebreich recommends the following formulæ:—*

As an ordinary hypnotic.

℞
Hydratis chlorali grana xxxviij
Mucilaginis acaciæ
Aquæ destillatæ ãã. f℥v
Fiat haustus.

---

* We have translated them from *grammes* to English weights and measures, which will explain their somewhat uneven quantities.

℞.

Hydratis chlorali gr. lxij
Syrupi aurantii
Aquæ destillatæ āā. fʒv
Fiat mistura cujus sumat cochleare magnum horâ somni.

As a sedative.

℞.

Hydratis chlorali gr. xxx
Syrupi aurantii
Mucilaginis acaciæ āā. f℥ss
Aquæ destillatæ f℥v
Fiat mistura cujus sumat cochleare magnum omni quâque horâ.

In delirium the dose may be from 30 up to 60 grains. For subcutaneous injection Dr. Liebreich recommends a solution of about 80 grains in 3 fluid drams of water.

PHARMACOPŒIA SUECICA. Editio septima, Stockholmiæ, 1869.

A neat little volume of 275 pages written in the Latin language and alphabetically arranged after the manner of the British Pharmacopœia. In the formulæ the quantities of each ingredient are generally given in parts, but when it is necessary to define specific quantities as in the case of masses to be divided into a certain number of pills, the weights ordered are *grammes*. Liquids are invariably estimated by weight, measuring being strictly forbidden.

As in some other continental pharmacopœias, a table is given indicating the maximum dose for an adult, of certain powerful medicines: if a prescriber wishes to exceed any one of these, he is bound to indicate his intention of giving an exceptional dose, by a note of admiration (!) or the addition of the word *sic*, failing which, the druggist is prohibited from dispensing the prescription. Some practice of this kind would be very advantageous in this country, where the druggist is not unfrequently perplexed to know whether an unusually large dose is ordered intentionally or not.

The Swedish pharmacopœia contains likewise a list of 35 medicines which may not be dispensed without medical authority, and which are required to be stored apart from the general stock; and there is another list of 38 still more potent preparations, which are further required to be kept under lock and key.

We ought to add that the work has a practical aspect, and that the formulæ seem judicious and reasonable, commendation which we could not bestow on the new French pharmacopœia with its 115 different syrups, and *alcoolats* and electuaries which for complexity are worthy of the middle ages rather than the nineteenth century.

HONORARY APPOINTMENTS.

Mr. H. Sugden Evans, President of the Pharmaceutical Society, and Professor Redwood, have been elected Honorary Members of the Pharmaceutical Society of St. Petersburg.

Professor Redwood and Professor Attfield have been elected Honorary Members of the Chicago College of Pharmacy.

Obituary.

PROFESSOR GRAHAM, F.R.S.

The Pharmaceutical Society has lost a distinguished honorary member and one of its earliest and staunchest supporters, by the death of Professor Graham, Master of the Mint, which occurred on the 17th of September. Mr. Graham, who was the son of a Glasgow merchant, was born on the 21st of December, 1805. He received his early education in his native city, and afterwards took the degree of Master of Arts in Edinburgh. His early studies and labours in chemistry were conducted in Glasgow, where he lectured for several years at the Mechanics' Institute and Andersonian Institution. In 1837 he succeeded Dr. Edward Turner as Professor of Chemistry at University College, London, and he continued to hold this appointment until, in 1855, he became Master of the Mint on the retirement of Sir John F. W. Herschel, Bart. Professor Graham took an active part in establishing the Chemical Society in 1840, and the Cavendish Society in 1846, and of the latter society he was the President throughout its continuance. He has been engaged in most important Government inquiries involving a knowledge of Chemistry during the period of his holding office as a Professor in London, and several of the results of commissions of which he formed part have been published in this Journal. But Professor Graham's scientific reputation, which stands very high, has been established by the important investigations he successfully carried out on several subjects, but especially on the diffusion of gases and liquids. He was elected a Fellow of the Royal Society in 1836; and a corresponding member of the Institute of France in 1848. In 1862 he was awarded the Copley medal of the Royal Society, for his speculations on the constitution of phosphates and other salts, for his discovery of the law of diffusion of liquids, and of the new method of separation known as dialysis.

MISCELLANEA.

Suicide by Oxalic Acid.—On Tuesday, September 7th, an inquest was held by Mr. Langham, deputy coroner, at Charing Cross Hospital, on the body of Catherine Dash, aged 36, who committed suicide by some irritant poison, supposed to be oxalic acid. In the absence of her husband, the deceased, according to her own statement, took some brandy, and afterwards oxalic acid. She was conveyed to the hospital, where she died in about twenty minutes after her admission. The jury was satisfied that the deceased had committed suicide, and returned a verdict accordingly.

Explosive Mixtures.—A correspondent in the 'American Journal of Pharmacy' for September states that he suffered severe personal injury by the explosion of the ingredients of a prescription, of which the following is a copy:—

℞ Potassæ Chloratis ℥iss.
Acidi Tannici ʒiss.
Olei Gaultheriæ gtt.xx.
Misce; ft. pulvis 1. Sig.: put in a quart of water.

The mixture appears to have been dispensed previously without ignition, but on this occasion a new Wedgwood mortar, with rough surface, was used, first powdering the chlorate of potash, adding the other ingredients, and continuing the trituration, when a violent explosion occurred. The editor, in commenting on the above, gives the following caution:—"Any organic substance having a large equivalent of loosely combined elements, like sugar, tannin, several of the glucosides, and other neutral bodies, should always be mechanically united with chlorate of potash with great caution, and the chlorate should be powdered alone, and then mixed with the other ingredients, *separately powdered*, on paper."

To Remove the Acidity in the Commercial Spirits of Nitrous Ether.—Mr. Albert E. Ebert, in the 'Pharmacist' of August, states that the free acids generally present in spirit of nitrous ether, may be easily removed by the use of animal or vegetable charcoal in the following manner:—"Add two ounces of purified animal charcoal to one pint of spirit of nitrous ether, let it stand eight or twelve hours, with occasional shaking, and then filter."

COMMENCEMENT OF THE PHARMACEUTICAL SESSION.

We beg to draw attention to the Notice which appears on the cover of this Journal, announcing the Opening Meeting of the Session, to be held on the evening of October 6th.

The Prizes will be distributed to the successful competitors of last Session, and Mr. Deane will address the Students about to commence work. On this occasion we hope to see many ladies present.

BOOKS RECEIVED.

Report on the Treatment of Epidemic Cholera. By John Murray, M.D., Inspector-General of Hospitals, Indian Medical Department.

Transactions of the Odontological Society of Great Britain. Vol. VI. 1867–68. London: Printed for the Society by Wyman and Son, Great Queen Street.

Transactions of the Epidemiological Society of London. Vol. III. Part 1. Sessions 1866–67, 1867–68. London: Robert Hardwicke, 192, Piccadilly.

The Pharmaceutical or Medico-Botanical Map of the World; showing the habitats of most of the plants comprising the Materia Medica. By George Barber, Pharmaceutical Chemist, Liverpool.

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the Editor, 17, Bloomsbury Square. Those received after the 20th of the month cannot be noticed in the ensuing number.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to Elias Bremridge, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. Churchill, New Burlington Street, London, W.

Sir,—I think that the attention of all chemists should be called to the case reported in your last number. It appears from the decision of the Worthing magistrates that whoever brings a prescription which contains a poison (so called in the Pharmacy Act) must ask if the writer is a legally qualified practitioner,—now in a large dispensing establishment this would be absurd; or, if not written by one, the patient must bring witnesses, etc., which in many cases would be impossible. For instance, if a gentleman or lady had a recipe for rheumatism containing tinct. opii or any other poison, and went to the seaside, how is it possible for them to get witnesses? I think that as this case concerns every chemist and druggist in the country, this decision should be appealed against, so as to be quite clear as to our liability. I think the Act relating to the sale of poisons was never intended to apply to a case like this, although in this case the medicine, or rather lotion, was intended for a criminal purpose; and in all probability, if Mr. Berry had put the question as to the qualification of the writer, he would have answered that he was. So how are we to discern the truth in such a case? Yet such a decision must be contrary to the meaning of the framers of the clause in the Bill which relates to the qualification of the prescriber. This should be certainly settled; and if funds are wanting,—and we cannot expect Mr. Berry to fight our battle, for such it really is,—they will be most cheerfully forthcoming. I for one should feel a pleasure in giving my mite for such a cause, and no doubt others, and many others, too, would do the same.

I am, Sir, your obedient servant,
W. S.

The Chlorodyne Controversy.

Sir,—You are doing good by a fair discussion of the chlorodyne question. I have tried or prescribed extensively, in dispensary and other practice, the three varieties of chlorodyne now in common pharmaceutical use. Each one has a distinctive peculiarity differing from the other. One, I find, relieves pain better than the two others; one gives headache, and rather disappoints; and one of them is very useful in the diseases usually advertised, such as diarrhœa, cancer, amenorrhœa, fever, cholera, etc.; so they mislead the public. All three are very valuable, but for specific symptoms. One acts obviously like valerian or prussic acid on hysteric or nervous symptoms; but for casual colicky pains, dysmenorrhœa, spasms of stomach, etc., at least two are wonderfully efficient. I think, in dispensary prescribing, nearly all the best effects of the three specimens are obtainable by use of chloric ether. I fear that, in diseased-heart cases, the prussic acid in some of the chlorodynes is very hazardous. The word chloro-dyne signifies "green pain," if it signifies anything. I have suggested a form which is called choridyne, the Greek word for "without" or freedom from (χωρὶς) pain,—in fact, another and more distinctive word than an-odyne. This is more rational than green pain, whatever that is. We evidently want a neat and portable mixture, that will not spoil, that will remove all kinds of pain, or spasm, or colic, rather than profess to cure cholera, cancer, or fever. I am, etc.,

CHARLES KIDD, M.D.

Sackville Street, Sept. 16.

P.S.—Every one knows the value of *James's Powder*, but of course nine men in ten make it for themselves, like Dover's Powder or Mindererus's Spirit. So must it be as to the chloroform compounds, now that we begin to apprehend or know their extreme value. We need not poison or destroy the blood either with "chloral," the new nine days' wonder, the substitute for chloroform. We must be careful of bichloride of methylene; that is of little value either, and takes fire or explodes. Chloroform and chloric ether, perhaps, are worth all our other anæsthetics and anodynes of this class, only they are not sufficiently studied, and the new substitutes shake the faith of the public unnecessarily in their safety and effectiveness. All which the 'Pharmaceutical Journal' does much good by explaining.

"*Zacharie*" (Boston).—Any elementary book on chemistry will give the information required. The figures on the right denote the combining proportions.

"*Medicus*" (Aldershot).—Pyroligneous oil of juniper is obtained by the destructive distillation of juniper wood.

"*Dispenser*."—If the preparation purports to be of the British Pharmacopœia, it must be made according to the formula given in that work.

Our Perth correspondent will do well to comply with the requirements of section 17 in the sale of "Vermin Killers." We are not in a position to give a legal opinion on the question. (2.) A thorough acquaintance with the little work in question would be advisable.

"*Registered Apprentice*" (Sunderland).—A person who passes the Minor examination receives a certificate from the Board of Examiners. The same certificate authorizes his registration either as an Assistant or as a Chemist and Druggist, and his name is at once removed from the Register of Apprentices and he is eligible for election as an Associate.

Mr. T. Lowe (Liverpool) and *Mr. Jenner* (Bury St. Edmund's) are thanked for their communications. The subject will not be lost sight of.

Syrupus Ferri Iodidi.—Mr. J. Strachan (Chester), in preparing this syrup, finds the following simple means most effectual:—"After mixing the iodine, iron wire, and water together in the flask, I set it aside for an hour or so before applying the heat; and, on this being done, ebullition seldom or never takes place with any amount of heat. Chemical union seems to take place quietly in the cold, and is afterwards facilitated, but not to any dangerous extent, by the application of heat."

"*Proteus*" (Paddington).—Apply by letter to the Registrar, 17, Bloomsbury Square.

Mr. F. G. Wormald (North Melbourne) sends an account of his *Carbolic Acid Soap*, which he has introduced in that colony with great success.

"*Inquirer*" (Goole).—Not necessary in the case referred to.

G. L. N. (Exeter).—The ordinary prescription book will answer the purpose, provided the article be labelled with the name and address of the seller.

"*Rhus Tox.*" (Bayswater) wishes to know the best method of dispensing the following prescription:—

℞ Argenti Nitrat. gr. x.
Phosphori gr. i.
Ext. Cannab. Indic. gr. vj.
Mic. Panis Recent. q. s. M.
Fiat pil. xx.

Probably the least objectionable method of dispensing this not very safe prescription would be as follows:—Put the phosphorus into about 20 grains of sugar of milk, previously moistened with water, and triturate until the phosphorus is thoroughly divided; then add the other ingredients.

J. P.—Hoblyn's 'Dictionary of Scientific Terms' would probably answer the purpose.

W. B. (Cannon Street) should address his question to the Council.

Mr. Miller and *Biondino*, etc., next month.

Wanted, the numbers of the Journal for July 1868, and January, February, and March, 1869. Full price given.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. V.—NOVEMBER, 1869.

THE FIRST, OR PRELIMINARY EXAMINATION.

With the present session have been inaugurated the arrangements necessitated by the new Bye-laws of the last session, in regard to the Preliminary or Matriculation Examination of the Society.

So long as the Society was purely a voluntary association of pharmaceutists, earnestly desiring the advancement in scientific position of their body, its functions had to be performed by individual exertion and influence, and by making the entrance to their own ranks as easy as possible, persuading overwrought young men to enter themselves in the race; thus instilling into their minds a desire for increased knowledge. Under these circumstances, it was excusable if a very wide latitude was permitted to youths commencing their regular study, and if the certificate of presumably qualified assessors of their classical attainments was accepted; or if, as was not unfrequently the case, a portion of the Minor was accepted in lieu of the Classical Examination, as originally constituted. So long as pharmaceutical education was thus encouraged purely for the pleasure of benefiting the body, such licences were permissible. But so soon as the efforts of the last twenty-eight years became recognized by the Legislature to the extent of making the hitherto voluntary and pleasurable duties compulsory, it behoved the Board of Examiners to potentialize the experience they had gained, and apply the results to the construction of new regulations. It had been observed that the failures and poor successes of the past had been mainly traceable to the neglect of early education in fundamental knowledge,—to a neglect, in fact, of the principles of an ordinarily liberal education; and it was found that the required certificate, of some provincial clerical or medical graduate, in many instances lamentably failed to guarantee the possession of a requisite amount of rudimentary knowledge.

With a view, therefore, to ensure uniformity, it has been insisted upon, in framing the new Bye-laws, that the examinations of the Society should necessarily consist of a Preliminary or first examination, comprising the classics; a Minor or first technical examination; and, *after an interval of at least three months*, a Major or complete professional examination. It would have been easy, and perhaps the easiest solution of the difficulty, to the Council and Board of Examiners to have insisted upon all three of these stages of the curriculum being consummated in London. The two latter were put without the power of the Council to remove from London, but the former still remained so far at disposal, that regulations could be made to obviate the necessity for candidates presenting themselves in London for the Preliminary Examination. Under these circumstances, it has been decided, and wisely, to accept the Oxford and Cambridge Middle Class Examinations, and the examination of the College of Preceptors, Too great stress cannot be laid upon the advantages to a youth entering the profession, of thus qualifying himself; and to all parents and guardians of youths about to enter upon their apprenticeship, we would urge the desirability of persuading the youths to work up for these examinations. By doing so, they will lay an excellent foundation for the reception at once of technical knowledge, and gain to themselves an immense amount of time, freed from the anxiety inseparable from the prospect of a classical examination subsequent to leaving the classic influence and guidance of the schools, and this is an immense advantage, only appreciable by those who have experienced it. But for the convenience of others, who from any cause are unable to avail themselves of these examinations, and with a view to a uniform test, the Board has arranged that every three months, or oftener if necessary, a simultaneous examination throughout the provinces shall take place. The Boards in London and Edinburgh set the questions, and examine and decide upon the results; the Local Secretaries are appointed by the Council to superintend and overlook the actual working out of the papers by the candidates. One such examination has now taken place; and, judging from its results, the system is calculated to work very well; if the Local Secretaries take the interest which their office warrants the expectation of, in rigidly carrying out the instructions furnished them, there is room for very little doubt that this mode of conducting the Preliminary or Matriculation examination will prove highly satisfactory, and furnish results of the greatest value in testing the qualification of candidates for admission, infinitely superior to the uncertain and indefinite certificates hitherto considered sufficient. Too great stress cannot be laid upon the importance to a successful pharmaceutist of making sure his fundamental education. Without it all his future studies will be labour of incomprehensibleness. We have, therefore, great pleasure in referring our readers to Mr. Deane's excellent remarks on the subject in his Inaugural Address to the students, for none is better able to express an opinion than he. Dr. Greenhow, also, the Government assessor of our examinations, alike in the interest of the public and the examinees, most frankly and truly observed, "With regard to classical knowledge, Latin at least is indispensable in a strictly business point of view for pharmaceutists, especially as the members of the profession to which he had the honour to belong did not always write so legibly as could be desired."

THE OPENING OF THE NEW SESSION.

Elsewhere in our Journal will be found a report of the opening meeting of the Pharmaceutical Session—a report which speaks so plainly of the advancing condition of pharmacy in Great Britain, and the work of our Society, as to need no comment from us. It must have been no small pleasure to Henry Deane to have such evidence as the sixth of October afforded of the growth and fructification of the tree which he helped to plant more than a quarter of a century ago, and has never ceased to nurture.

CO-OPERATIVE TRADING.

When a number of individuals, similarly circumstanced, have an object in view the attainment of which is of great importance, and can only or most easily be effected by their combined efforts, it is very natural that they should unite in concerting and applying means for its accomplishment; the more closely such individuals are connected by proximity of residence, similarity of occupation or general position in life, the greater is the tendency to effect by co-operation what they could not so well accomplish by their uncombined exertions. It is quite intelligible, therefore, that a class of men who, by education and the nature of their employment, are fitted for a position in society which the limited incomes derived from their occupations barely enable them to maintain, should endeavour to economize their means of living by obtaining the necessaries of life at the lowest possible cost. In this way, the Civil Service Co-operative Associations were formed, the numerous class of clerks and other officials in Government offices uniting together for the purchase of certain articles of food and clothing by wholesale, and afterwards dividing them for their individual use. Co-operative stores were the means adopted by such associations for distributing to the members, according to their wants, what had been purchased for them at wholesale prices. It was thus proposed to save to the consumer in the price of each article the amount put on by the retailer for interest on the capital invested by him, and a fair remuneration for his services.

There is reason to believe, however, that the true character of this new system of retailing goods, ostensibly but not really without profit to the retailer, will develope itself in due time; that the expenses and responsibilities of trading will be found to affect these and other establishments for the distribution of goods to the public in the same way and practically to the same extent; that capital will establish its claim to interest, and that the knowledge and talent required for the management of trading affairs is as much entitled to remuneration as those applied to other pursuits. Under particular circumstances, and to a limited extent, the co-operative system of distributing goods may be found to present some advantages which may give permanence thus far to the system, but beyond this, its very limited applicability, it may be confidently predicted that it will die a natural death.

One of the methods adopted for extending the co-operative system has been to appoint retail dealers as agents, by whom goods are supplied to members of a co-operative association at reduced prices corresponding with those at which similar goods are sold at the stores of the association. Tradesmen are thus frequently induced to give their sanction and support to a system which, if rightly considered, cannot be thought otherwise than injurious to the interests of their trades, by depreciating the value of their capital, including the knowledge and skill employed in their occupation. These co-operative agents are tradesmen who have two sets of prices, one for the general public, and the other for customers who present a card, stating that they are members of a co-operative association. In the latter case a reduction sometimes of 10, and sometimes of as much as 25 per cent. is made upon the prices charged to the former class. Thus two customers may stand side by side at a counter, and both be served with similar articles, but one of them is charged 25 per cent. more than the other. Yet both may be similarly circumstanced in life, and require the goods for similar purposes. What justification can the tradesman make to the high-priced customer against the charge of extortion or unfair trading? Should his co-operative clients increase in number, and his other customers at the same time fall off,—a very possible result of double dealing,—he would probably soon find himself in debt and difficulties; and from these he might be tempted to seek escape by resorting to a species of deception, the almost inevitable result of maintaining this percentage system, namely, that of selling inferior goods, or of first putting on the percentage to be afterwards taken off.

This co-operative agency system appears to have been encouraged to some extent among dealers in drugs, and even dispensers of medicines. We could hardly have believed, had we not seen an announcement of the fact, that members of our body could be so regardless of the true interests of themselves and their brethren as to lend themselves to the maintenance of such a system, especially while complaints are being daily made of the inadequacy of the remuneration afforded by the ordinary charges for dispensing medicines. In a prospectus issued by the "Civil Service Supply Association, Limited," we find a list of prices for "drugs, family and patent medicines," in which are the following:—Blue pill and draught, 4*d.*; 4 oz. of castor oil, 4½*d.*; citrate of iron and quinine, 2*s.* an ounce; compound rhubarb pills, 4*d.* a box; ipecacuanha wine, 4 oz. bottle, 11*d.*; patent medicines, 3*d.* off 13½*d.*; Howard's sulphate of quinine, 6*s.* 6*d.* per oz. In the same prospectus we find the advertisements of chemists occupying good positions among their London brethren, one a pharmaceutical chemist by examination, who offer "drugs, medicines, chemicals, etc." at 25 per cent. off the ordinary prices.

We feel assured, in putting these facts before our readers, that further comment upon them is unnecessary.

IMPROVED MORAL SENSE IN PHARMACY.

We congratulate the American Pharmaceutical Association upon the excellent example they have set, in adopting a standard of morality, the maintenance of which among their members cannot fail to produce a beneficial influence, not only throughout their own country but wherever pharmacy is practised. Still it may be a question, considering the nature of a large number of articles in common use, prepared and sold by pharmaceutists in all parts of the world, whether the first case in which this high standard has been applied was not dealt with more harshly than sound wisdom required. In another part of this Journal, at page 294, will be found an account of the measures adopted for exposing and repudiating the conduct of a member of the Association, who had unfortunately overstepped the bounds of fair dealing, by selling an article under a false name.

There could be no better and sounder indication of the beneficial influence of association among men engaged in similar occupations, for the purpose of advancing their common interests by improving their professional qualifications, than that which is manifested in the exercise of a more elevated moral sense.

SALE OF METHYLATED SPIRIT WITHOUT A LICENCE.

Several cases have recently occurred in which chemists have been fined for selling methylated spirit without a licence. The highest penalty for this offence is £50, which may be imposed on summary conviction before a magistrate, and the magistrate having convicted has no power of reducing the penalty below one-fourth of that amount. There is, however, a subsequent appeal to the Board of Inland Revenue, who are authorized to settle the case according to its merits, either confirming the magistrate's decision or mitigating the penalty wholly or partially. The Board have great, almost despotic power; but we believe they generally exercise it with moderation and judgment. Mr. Farmer, of Putney, has sent us an account (see page 307) of the circumstances under which a penalty of £12. 10*s.* has been enforced against him, although the Board had previously reduced the fine to £1; but we believe this reduction was accompanied by a condition that it should be immediately paid, and as Mr. Farmer demurred to the payment, and allowed fourteen days to elapse before settling the case, the mitigated penalty was withdrawn, and the original fine recovered in a very peremptory manner. The case is published as a warning to chemists generally, but we must say the Board appear, from what has been represented to us, to have acted with more severity than usually characterizes their proceedings under similar circumstances.

On the other hand, we cannot but feel surprise that, considering the very small amount now charged for a licence to sell methylated spirit (only ten shillings per annum), any chemist should expose himself to the annoyance and vexation of such a conviction.

REGULATIONS AFFECTING THE STORAGE AND SALE OF PETROLEUM.

We call the special attention of those engaged in the sale or use of petroleum to the regulations which the law requires to be observed in reference thereto. The serious accidents which have recently occurred, including the extensive destruction of shipping at Bordeaux, have caused the authorities to put the provisions of the law into operation with more than usual strictness, and it behoves those who are in any way subject to the operation of the law to consider the nature and extent of their liabilities.

In the first place it should be understood that the term "petroleum," as used in the Act of Parliament relating to the sale and use of this substance, signifies "all such rock oil, Rangoon oil, Burmah oil, any product of them, and any oil made from petroleum, coal, schist, shale, peat, or other bituminous substance, and any product of them, *as gives off an inflammable vapour at a temperature of less than* 100° *F.*" It is to these very volatile oils that the regulations imposed by law apply, and not to the oils, derived from the same sources, which do not give off an inflammable vapour at a temperature of less than 100° F.

Now, bearing in mind what petroleum is by Act of Parliament, there are two important provisions of the law relating to its storing and sale, and they are as follows:—

1. That no petroleum shall be kept, otherwise than for private use, within fifty yards of a dwelling-house or of a building in which goods are stored, except in pursuance of a licence given in accordance with the Petroleum Act, 1862; and that there may be annexed to any such licence such conditions as to the mode of storage, as to the nature of the goods with which petroleum may be stored, as to the testing such petroleum from time to time, and generally as to the safe keeping of petroleum, as may seem expedient to the local authority.
2. That no person shall sell or expose for sale, for use within the United Kingdom, any description of petroleum which gives off an inflammable vapour at a temperature of less than 100° F., unless the bottle or vessel containing such petroleum have attached thereto a label, in legible characters, stating as follows:—"Great care must be taken in bringing any light near to the contents of this vessel, as they give off an inflammable vapour at a temperature of less than one hundred degrees of Fahrenheit's thermometer."

For violating the first of these regulations, the occupier of the place in which such petroleum is kept is liable to a penalty not exceeding twenty pounds a day for each day during which petroleum is kept in contravention of the Act. And for violating the second regulation, the offender is subject to a penalty not exceeding five pounds.

At a recent meeting of the Court of Aldermen in the City of London, Alderman Wilson stated that a considerable quantity of the more volatile petroleum spirit was being sold, the vapour of which ignited much below that specified in the Act, and he wished it to be understood that those dealing in such spirit were liable to a fine of £20, which fine would be rigidly enforced. He had just had such a case brought under his judicial notice, and, the defendant being a widow, he mitigated the fine; but it was the intention of the magistrates in future in all cases to inflict the full penalty.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *October 6th*, 1869,

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

Present—Messrs. Abraham, Bottle, Bourdas, Brady, Carteighe, Deane, Dymond, Edwards, Haselden, Hills, Ince, Morson, Orridge, Sandford, Savage, Squire, Stoddart, and Williams.

The minutes of the previous meeting were read and confirmed.

The report of the Finance and House Committee was presented, showing a balance in the Treasurer's hands of £988. 12*s.* 7*d.* on account of the General Fund, and on account of the Benevolent Fund a balance of £488. 3*s.* 4*d.*, and submitting for payment, accounts, and various items amounting to £1281. 11*s.* 2*d.*

Resolved—That the report be received and adopted, and payments made.

It was moved by Mr. Sandford, seconded by Mr. Deane, and

Resolved—That the thanks of the Council be given to the President and Professor Redwood for their attendance at the International Pharmaceutical Congress at Vienna, and that their report be entered on the minutes.

REPORT.

"To the Council of the Pharmaceutical Society of Great Britain.

"We have the honour to report that in conformity with the resolution passed at your last meeting in September, we immediately proceeded to Vienna, arriving there in the forenoon of Wednesday, the 8th of September. On the same evening we were most cordially received by the officials and other delegates of the International Pharmaceutical Congress, as the first representatives accredited to that body from the Pharmaceutical Society of Great Britain, at a *soirée* convened for the purpose of interchange of greetings between delegates and Viennese Pharmaciens.

"For an account of the proceedings of the Congress, we refer to the detailed report in this month's issue of the 'Pharmaceutical Journal.' As there indicated, the questions discussed did not specially affect the immediate interests of British Pharmacy, though of great political importance to the status of Pharmacy on the continent of Europe. In so far as the questions expressed the desire of Europe to obtain similar legislative recognition and political freedom to that which pharmaceutists in this country enjoy, the discussions presented an interest in which it was most gratifying to sympathize, and to be able to give the assurance of the hearty co-operation of British Pharmacy in encouraging the establishment of independent pharmaceutical schools and the erection of syndical chambers as proposed at the Paris Congress. In regard to the former your delegates were able to instance the experience and success achieved during the past quarter of a century in our own school; and in reference to the latter we could illustrate the operations of the Pharmaceutical Society as the immediately recognized organization through which all legislation in regard to Pharmacy takes action; these being in effect the functions sought for the syndical chambers.

"We feel our mission has been of service in removing from the minds of many the impression that British Pharmacy is indifferent to the welfare and advancement of Pharmacy in other countries, caused by the conspicuous absence from the Brunswick and Paris Congresses of any delegate from England. Opportunities were also afforded, both publicly and in private, of explaining the precise position of our Society towards the pharmaceutists of Great Britain and the functions it performs in the State, as well also as the nature of our educational establishment and the character of our examinations, with regard to which subjects we found a strange misunderstanding prevailed.

"These congressional reunions, by bringing into close social intercourse men of like professional pursuits, engaged in countries widely differing from one another in their political and social characteristics, cannot fail to be productive of much cosmopolitan liberality of feeling; and directly and indirectly conduce to greater independence of action and a higher standard of scientific attainment.

"We cannot close this report without expressing our great satisfaction at the excellent management and conduct throughout of the business of the Congress, and especially must we record our obligations to Mr. Waldeim, whose obliging courtesy removed every difficulty in comprehending the discussions as they proceeded in a foreign language.

"To the Viennese Pharmaciens our personal thanks are eminently due for the hearty welcome accorded us, and the forethought displayed in the arrangements for the entertainment of their guests; and most successful were they in making a visit to their Imperial city an excessively pleasurable and enjoyable one.

"We have the honour to be, Gentlemen,
"Your most obedient servants,
"H. SUGDEN EVANS,
"T. REDWOOD."

"*October 5th*, 1869.

It was moved by Mr. Sandford, seconded by Mr. Orridge, and

Resolved—That the thanks of the Pharmaceutical Society of Great Britain be given to the Pharmaceutical Society of Austria for the hospitable entertainment given to the English delegates at the late International Congress, accompanied by an expression of hope that on some future early occasion the Congress may be held in London.

The President reported that he had received the following memorandum from the Director of the Laboratory:—

"The Laboratory entries during the first few days of the session have usually been from 10 to 18; last year they rose to 24; this year they are 38."

Mr. James Collins was appointed Curator of the Museum for the ensuing year.

In accordance with notice, it was moved by Mr. Dymond, seconded by Mr. Stoddart, —That as the universally expressed feeling of the Anniversary Meeting was in favour of the publicity of the Proceedings of the Council of the Society, it is expedient that its proceedings be fully reported in the 'Pharmaceutical Journal,' and that reporters desiring to represent other Journals be permitted, at the discretion of the Council, to be present, but that any portion of the proceedings which the Council shall declare to be unsuited for publication, shall not be reported.

Amendment—Moved by Mr. Orridge, seconded by Mr. Squire,—That it is not desirable to make any alteration in the existing system of reporting before the next annual meeting.

For the Amendment,—Messrs. Abraham, Bottle, Bourdas, Deane, Edwards, Haselden, Hills, Ince, Morson, Orridge, Sandford, and Squire.

Against,—Messrs. Brady, Carteighe, Dymond, Savage, Stoddart, and Williams.

The original motion was therefore lost.

On the Amendment being put as a substantive motion, the following further Amendment was moved by Mr. Abraham, seconded by Mr. Carteighe,—That during the consideration of a motion of which notice has been given, which any two members think should be discussed in the presence of reporters, they may be admitted.

For the Amendment,—Messrs. Abraham, Brady, Carteighe, Dymond, Stoddart, and Williams.

Against,—Messrs. Bottle, Bourdas, Deane, Edwards, Haselden, Ince, Morson, Orridge Sandford, and Squire.

This Amendment was also lost.

Another Amendment was then moved by Mr. Williams, seconded by Mr. Brady,—That as the generally expressed feeling of the anniversary meeting was in favour of the greater publicity of the proceedings of the Council of the Society, it is expedient that its proceedings be more fully reported, and that reporters be permitted to be present, and that the question be referred to a Committee to settle further details. The Committee to consist of Messrs. Dymond, Carteighe, Brady, Sandford, and Orridge.

For the Amendment,—Messrs. Brady, Carteighe, Dymond, Savage, Stoddart, and Williams.

Against,—Messrs. Abraham, Bottle, Bourdas, Deane, Edwards, Evans, Haselden, Ince, Morson, Orridge, Sandford, and Squire.

This Amendment was lost.

Mr. Orridge's Amendment,—That it is not desirable to make an alteration in the existing system of reporting before the next annual meeting," was then put as a substantive motion.

For,—Messrs. Bottle, Bourdas, Deane, Edwards, Haselden, Ince, Morson, Orridge, Sandford, and Squire.

Against,—Messrs. Brady, Carteighe, Savage, Stoddart, and Williams.

The motion was declared to be carried.

In reference to the notice given that steps be taken to assimilate the laws which regulate the practice of pharmacy in Ireland and Great Britain respectively,—

It was moved by Mr. Abraham, seconded by Mr. Bottle, and

Resolved—That the question of legislation relative to Pharmacy in Ireland and the Colonies be referred to a select committee for detailed consideration. The Committee to report to this Council as early as they may be prepared to do so.

The Committee to consist of the President and Vice-President, Messrs. Abraham, Sandford, Hills, Edwards, Morson, and Squire.

It was moved by Mr. Orridge, seconded by Mr. Carteighe,—That in the opinion of this Council it is due to the constituent body that after the completion of the present volume of the 'Pharmaceutical Journal,' the ensuing issue should be made fortnightly.

On this question being discussed, the mover and seconder consented to its being withdrawn. Whereupon

It was moved by Mr. Brady, seconded by Mr. Savage, and

Resolved—That a Committee be appointed to consider the desirability of publishing the 'Pharmaceutical Journal' weekly, instead of monthly as heretofore.

It was moved by Mr. Edwards, seconded by Mr. Orridge, and

Resolved—That the following members of the Council be appointed a Committee to consider the best means of carrying out the foregoing resolution in relation to the Journal:—the President and Vice-President, Messrs. Orridge, Carteighe, Brady, Mackay, and Sandford.

The following Pharmaceutical Chemist was elected a—

MEMBER.

Swingburn, Richard Henry, Stony Stratford.

The following Chemists and Druggists, registered under the "Pharmacy Act, 1868," were elected—

MEMBERS.

TOWN.	CHRISTIAN & SURNAME.	TOWN.	CHRISTIAN & SURNAME.
Bowness-on-Windermere	Birkett, Charles.	Loddon	Ellis, Thomas William.
Bishop's Castle	Davies, Edward.	Margate	Candler, Jos. Thomas.
Bolton	Harwood, E. Green.	Nailsea	Pollard, Wm. Henry.
Calcutta	Buncombe, Robert M.	Ruthin	Rouw, Wm. Theodore.
Carnarvon	Lloyd, William.	Walthamstow	Nottingham, James F.
Chelmsford	Tomlinson, James.	Windsor	Grisbrook, Edward.
Dulverton	Watling, Arthur.	Woodstock	Stubbs, Robert.
Garston	Johnstone, Wm. Boyd.	York	Hayland, W. Charles.
Landport	Stanswood, John.		

LONDON.

Burton, Joseph, 397, Cambridge Road, Victoria Park, N.E.

Fox, William Robert, 109 and 111, Bethn Green Road, E.

The following were elected—

ASSOCIATES.

Brooks, Thomas, Spalding.
Lane, William, Bristol.
Lees, William, London.
Morris, Griffith Evans, Dover.
Pattison, Thomas, Birmingham.
Ransford, William, Penzance.
Richardson, John, London.
Riggall, Francis H., Horncastle.
Swire, Jabez, Skipton.
Sequeira, Eduardo C., Rio Grande do Sul.

Several cases in reference to registration under the Pharmacy Act, 1868, and the operations of the said Act were considered, and some referred to the solicitors for their opinion.

EXAMINATIONS IN LONDON.

October 1*st*, 1869.

Present—Messrs. Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, and Haselden.

MODIFIED EXAMINATION.

Thirty-six candidates presented themselves; the following twenty-four passed, and were registered as

CHEMISTS AND DRUGGISTS.

Angel, Alfred, Lewes.
Best, James, Leicester.
Bisley, George, Rotherhithe.
Blow, John, Doncaster.
Brailsford, Henry, Southampton.
Bromley, Edward, London.
Casely, Samuel, London.
Cronshaw, Christopher, Over Darwen.
Davies, Arthur Richard, Newport, Mon.
Dawson, Robert, Manchester.
Epps, Franklin, London.
Griffiths, Henry William, Merthyr Tydfil.
Hackett, Thomas, Liverpool.
Harrison, Joseph Painter, Salisbury.
Howard, John, Swaffham.
Hughes, John Myddleton, London.
Lister, Thomas William, Liverpool.
Priddin, John, Astbury.
Richards, Alfred, Hull.
Richardson, Richard, London.
Shields, Robert James, Sunderland.
Smith, John, Liverpool.
Thompson, Thomas, Sunderland.
Williams, Evan David, Wandsworth.

October 15*th*, 1869.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Deane, Edwards, Evans, Gale, Garle, Haselden, and Southall.

MODIFIED EXAMINATION.

Fifty Candidates presented themselves; the following twenty-nine passed, and were registered as

CHEMISTS AND DRUGGISTS.

Barnard, Alfred Philip, London.
Bolas, Arthur, Birmingham.
Buckham, Frederick, Widemarsh.
Burnham, John Anthony, London.
Corbett, William, Worcester.
Davies, Samuel, Rowley Hill.
Doughty, Thomas, London.
Forrest, George Isaac, Sheffield.
Foster, Frederick Henry, Plymouth.
Greasley, Joseph, Melton Mowbray.
Harris, Michael Charles James, Crewkerne.
Howard, Henry, Weston-super-Mare.
James, Alfred, Bow.
Laycock, Charles, Sheffield.
Ness, William, Cottingham.
Pickering, Thomas, Horsham.
Roberts, John Kenn, Aberkenfig.
Shaw, John Wormall, London.
Slade, Thomas Probert, Tenbury.
Standly, William, Liverpool.
Starie, William Chantler, Bristol.
Stretton, James, Brizlingcote.
Walker, Robert, London.
Wallis, George, Matlock Bridge.
Warrington, John Charles, Derby.
Watkins, Robert Tully, Oxford.
Watson, Thomas William, Darlington.
Whittaker, John William, Stockport.
Wood, George Edward, Dorchester.

FIRST, OR PRELIMINARY EXAMINATION.

Forty-six candidates were examined according to the revised regulation of the Board of Examiners (see cover, p. 2); the following thirty-two passed, and were registered as

APPRENTICES OR STUDENTS.

Morgan, Rhys Dafydd, Reading.
George, John, Kidderminster.
Willis, Blankley William, Kidderminster.
Equal. { Evans, Daniel, Carmarthen.
Page, William Henry, London. }
Equal. { Andrews, William Leutham, Scarborough.
Clement, Joseph, Coleford. }
Beames, Thomas Carnarvon, Milton.
Duncalf, James Mills, Congleton.
Equal. { Harvey, William Sutton, Margate.
Maurice, James, Cardigan. }
Walton, Jonathan Sparke, Haydon Bridge.
Equal. { Street, Marsden F., Sutton-in-Ashfield.
Wardle, Herbert William, Stalybridge. }
Equal. { Binns, John G., Manchester.
Bowen, Alfred Longmore, Ludlow.
Lockyer, Walter, Deptford. }
Adams, William, Barnstaple.
Noad, Joseph, Coleford.
Equal. { Sanders, T. S., Manchester.
Wheatley, Arthur William, Thame. }
Edmonds, Henry, Bromley.
Bamfield, John, Bristol.
Richardson, William Henry, Altrincham.
Fowler, William Ratcliffe, Ipswich.
Southwell, John William, Scarborough.
Hyne, Harry, Bristol.
Equal. { Harwood, John L., Redhill.
Roebuck, Alfred, Manchester. }
Coleby, Frederick, Surbiton.
Davison, Anthony, Kidderminster.
Jones, David Lloyd, St. Asaph.

The above names are arranged in order of merit.

October 20*th*, 1869.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Gale, Garle, Hanbury, and Haselden.

Twenty-four Candidates presented themselves for Examination; the following eighteen passed, and were duly registered:—

MAJOR (as Pharmaceutical Chemists).

*Candy, John William Gilbert, Bath.
*Rowell, Robert Henry, Newcastle-on-Tyne.
Tansley, Isaiah, Lowestoft.
Colchester, Wm. Markham, jun., London.
Machin, Frederick John, Sheffield.

MINOR (as Chemists and Druggists).

†Bateman, John Montague, Canterbury.
Saunders, Ernest Clement, Bury St. Edmund's.
Nuthall, Edwin, Norwich.
Metcalfe, Wilson, Harrogate.
Raworth, Harrison Walker, Bristol.
Adams, Frank, Brighton.
Sprackett, Wm. Robert Haycroft, Bristol.
Odie, Edward Bruce, Swansea.
Saunders, Arthur, London.
Mason, Philip Henry, Norwich.
Moon, Henry, Sunderland.
Tilson, James, Tydd Gote.
Edden, Thomas Lewis, Bath.

The above names are arranged in order of merit.

FIRST, OR PRELIMINARY EXAMINATION.

The certificates of the following persons examined in the Provinces previous to the adoption of Simultaneous Examinations were submitted and approved, and the several persons duly registered as

APPRENTICES OR STUDENTS.

Archbold, George, Berwick-on-Tweed.
Askham, Arthur, Sheffield.
Ballard, Frank, Ludlow.
Bateman, William Harry, Cardigan.
Bennett, Ebenezer, Sheerness.
Biddle, Charles John, Manchester.
Birchall, Thomas Barrow, Preston.
Blount, Ralph, Norwich.
Bowen, John William, Southampton.
Brasnett, Robert John, King's Lynn.

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* Passed with honours; eligible at the end of the Session to compete for the Pereira Medal.
† Passed with honours; eligible at the end of the Session to compete for the Prize of Books.

Brown, William Braithwaite, Preston.
Butler, William H., Frome.
Capern, Francis Thomas, Weston-sup.-Mare.
Caswell, Thomas George, Dudley.
Chandler, John, Nottingham.
Clark, John George, West Hartlepool.
Clayton, Charles, Lincoln.
Cotterill, Samuel, Southampton.
Davies, John, Newcastle Emlyn.
Dyson, Joseph Herbert, Knutsford.
Evans, William Penn, Liverpool.
Flooks, George Hayward, Sherborne.
Gauge, George, Ludlow.
Goodman, Samuel, Derby.
Hackett, John Henry, Lincoln.
Hillier, Henry, Newport, Monmouth.
Holland, Tom, Lincoln.
Hoyles, George, Lincoln.
Hunt, George F., Landport.
Jefferson, John Mitchell, Southport.
Jinks, John, Tipton.
Jones, Charles Alfred, Birkenhead.
Jones, John Thomas, Pembroke.
Jones, Richard, St. Asaph.
Lewis, Owen, Pwllheli.
Mansbridge, Mathew Charles, St. Asaph.
Marcus, Edward Wm. Parker, Landport.
Maurice, Thomas, Cardigan.
Moorhouse, Walter, Wakefield.
Morris, Thomas H. Vaughan, Dorchester.
Nassau, Samuel Charles, Hull.
Palmer, William Joseph, King's Lynn.
Peach, Richard Walter, Billinghay.
Penson, Walter, King's Lynn.
Pentney, James Chapman, Great Yarmouth.
Pollard, Ambrose, Guildford.
Rees, John, Brynmawr.
Rieveley, Charles, Birkenhead.
Robinson, James, Darlington.
Rutter, John, Cambridge.
Ryan, Laurence, Cambridge.
Sale, Thomas John, Ipswich.
Sanderson, Thomas Eastwood, Darlington.
Springall, John Barcham, Norwich.
Stewart, Edward Hinton, Tiverton.
Stokes, Charles, Reading.
Strickland, George Hodgson, Darlington.
Sumption, James, Newport, Monmouth.
Taylor, John William, Great Grimsby.
Tebbutt, Edwin, Hemel Hempstead.
Thomas, John Henry, Sleaford.
Udale, Daniel, Congleton.
Vertue, Ernest Sutherland, Ely.
Waring, Albert Wynne, Bedford.
Watson, Horace, Laceby.
Wells, John, Sleaford.
White, Horace Abbott, Carmarthen.

On the presentation and approval by the Board of the Certificate of the Oxford Middle Class Examination, the following was registered as an

APPRENTICE.

Fox, Charles Edward . . . Messrs. Fox and Son . . . London.

EXAMINATION IN EDINBURGH.

October 5th, 1869.

Present—Messrs. Aitken, Brown, Buchanan, Kemp, Mackay, and Young.

PHARMACEUTICAL CHEMISTS.

Duncan, William, Grantown.
Young, John, Elgin.

Five candidates presented themselves for the Minor Examination; the four following passed, and were registered as

CHEMISTS AND DRUGGISTS.

Duncan, Joseph, Edinburgh.
Selkirk, James, Edinburgh.
Skirving, George, Edinburgh.
Wales, Edward George, Sunderland.

The following fifteen passed the Modified Examination, and were registered as

CHEMISTS AND DRUGGISTS.

Alexander, William, Glasgow.
Allatt, Frederick Thomas, Penrith.
Bishop, Thomas, London.
Dakers, John Joseph, Newcastle.
Denoon, Robert, Inverness.
Kerr, Robert McCammon, Haltwhistle.
Lamb, Robert, Aberdeen.
Lawrence, Alexander, Comers Midmar.

Layng, Robert Crichton, Belfast.
Livingstone, John, Edinburgh.
McKinnell, Thomas Maxwell, Edinburgh.
Poyser, Robert, Manchester.
Spence, John Ross, Aberdeen.
Steckles, Thomas Brand, Newcastle.
Thom, James, Aberdeen.

The following passed the Preliminary Examination, and were registered as

APPRENTICES OR STUDENTS.

Blanshard, John Raimes, Edinburgh.
Capel, Jeremiah D. Van, Newcastle.
Fingland, William, Thornhill.
Mackay, James Bunyan Lillie, Edinburgh.
Robinson, George Carr, Edinburgh.
Scott, Walter, Elgin.

PHARMACEUTICAL MEETING.

October 6th, 1869.

The Inaugural Meeting of the session 1869–1870 was held on Wednesday evening, October 6th, when the rooms of the Society were well filled by ladies and gentlemen desirous of witnessing the distribution of prizes to the successful students of the past session, and of hearing an inaugural address by Mr. Deane to those about to renew or commence their pharmaceutical studies.

The chair was occupied by H. SUGDEN EVANS, Esq., President of the Society, who, in opening the proceedings, said:—

My first duty this evening is to offer to the ladies who grace our opening meeting by their presence a most hearty welcome. It has been the custom on these occasions for your President at once to call upon the Professors to report on the competition for the sessional prizes, but, if I slightly infringe this custom to-night, I must crave your indulgence, it never before having fallen to the lot of one who has passed through the whole curriculum of study provided by the Society to open a session, as it is my proud duty as your President to do this evening. Precisely twenty-one years ago, and almost on the very spot I now occupy, I commenced my pharmaceutical studies, under the able guidance of my esteemed friend Dr. Redwood, and the late Drs. Pereira and A. T. Thomson; with feelings of intense satisfaction and reverence I recall the time when I imbibed from them my first taste for scientific knowledge. The latter have gone from amongst us, yet live revered in the memories of their pupils. I cannot express the advantages I feel I derived from the lessons then learned, the example then set, the interest then evoked, and without which the drudgery of the simple business of pharmacy must have been unendurable. Nor am I singular in this matter, for a short time since I met one who was almost a contemporary with myself in the school, one of our earlier prizemen, but who, seeking his fortunes on a more lofty platform, and having already obtained the fellowship of the Royal College of Physicians, could nevertheless thus heartily express himself:—"I glory in the fact that I studied at Bloomsbury Square, for I consider I was there made a man. The knowledge imparted was so thorough that it put me in the first ranks at the London University, and, having taken the Society's prize, I had a locus at once." This is a very gratifying testimony to the thoroughness of the education imparted in our school; but we should be much better pleased to see our prizemen seeking to elevate our own profession, which can ill spare their talent, rather than gracing another—already rich in native talent. It is to be hoped the prizemen addressed this evening will feel themselves identified with British pharmacy, they have given us an earnest of what they can do, and I charge them not to disappoint the expectations they have excited. Much is looked for in the future of British pharmacy. The rapid strides which have been made within the last quarter of a century, the gradual but decided elevation of the social and scientific position of the whole body of pharmaceutists, the high political position we have gained, all conduce to encourage the hope that ere long, pharmacy in Great Britain will take as high a rank as it does on the continent of Europe. The opportunity I have recently had, at Vienna, of conversing with some of the most learned and distinguished pharmaceutists of the Continent enables me most emphatically to say to the young men before me, that the eyes of Europe are upon them in eager expectation. Our Continental brethren are immensely gratified at the political freedom we have achieved, and seek like recognition. They are well satisfied our curriculum is wisely constructed, and our examination-test adjusted to the needs of the profession. What they look for is a higher scientific development of British pharmacy.

Mr. EVANS then called upon Mr. Haselden to read the Report of the Examiners.

Mr. HASELDEN said:—This is not the first time that I have had the pleasure of appearing before an audience in this lecture hall, but upon no occasion have I done so with greater pleasure. My task to-night is a light and easy one, rendered more agreeable by the presence of so many ladies. I will now, without further remark, read the Report of the examinations:—

During the past session, 66 candidates presented themselves for the Major examination; of these, 49 passed, 23 of them in honours, whilst 17 were remitted to their studies.

253 candidates entered for the Minor examination; of whom, 198 obtained certificates, 58 with honours, and 55 were rejected.

885 came up for the Modified examination; 696 were successful, and obtained registration as Chemists and Druggists, 189 failed.

59 candidates presented themselves for the separate examination appointed for men in business on their own account; 42 succeeded, but 17 failed.

In all, 1263 candidates were examined during the Session; or, allowing for those who, being rejected, again presented themselves, 1122 persons submitted themselves to our examinations; of these, 2 were ladies, and they passed in an exceedingly creditable manner. Of the 303 persons rejected, 1 was so thrice, 18 twice, and 284 once.

Of those who passed the Modified examination, 3 have since passed the Minor, and 1 the Major.

For the Pereira Medal, 23 were eligible to compete; 5 did so, the prize being awarded to George Conder.

For the Prize of Books, 58 were eligible; 19 competed, John W. Gilbert Candy being the successful candidate.

PEREIRA MEDAL.

The questions for the Examination were as follows:—

BOTANY.

1. Give the characters of *Leguminosæ* and *Rosaceæ*, pointing in what they agree and in what they differ.
2. How does the wood of *Coniferæ* differ from that of ordinary exogens?
3. Describe the structure of the fruit in the apple, strawberry, raspberry, and peach.
4. What is meant by the respiration of plants, and how is it effected?

MATERIA MEDICA.

1. Describe the fruit and seed of *Strychnos Nux-vomica*.

2. How and where are the Balsams of Peru and Tolu obtained? How do they differ? and what mistaken notions have prevailed concerning the source of Balsam of Peru, and how did they originate?
3. Is Starch a constituent of Oak Galls? If it is, state under what circumstances it occurs.
4. Give some account of the manufacture of Attar of Rose, stating precisely the localities in which it is chiefly carried on. Notice any peculiarities for which this essential oil is remarkable.

CHEMISTRY.

1. What is the meaning of the term Quantivalence? Give the formulæ for the following, and at the same time explain the quantivalence of each element present:—
   Marsh Gas (Light Carbonetted Hydrogen).
   Water.
   Ammonia.
   Hydrochloric Acid Gas.
   Carbonic Acid Gas.
   Sodium Chloride.
   Magnesium Sulphate.
   Bismuth Subnitrate.
2. If Phosphate of Lime were mixed with Subnitrate of Bismuth, how would you detect its presence, and what means would you adopt for separating them so as to make the Bismuth available for use?
3. How would you prepare Formic and Acetic Acids, Butyric and Valeric Acids, and their respective Alcohols? Show the relation they bear to each other.

PRIZE OF BOOKS.

The questions for the Examination were as follows:—

DISPENSING AND PHARMACY.

1. Describe the best way of dispensing the following prescriptions; give a reason for the same, and write the labels in suitable language:—

℞ Acid. Hydrocyan. Dil. ♏iv.
Mistur. Amygd. fʒvj.
Potassæ Bicarbon. gr. xx.
Succi Limonis fʒiij.
Magnes. Carbon. gr. xv.
Aquæ Destillat. fʒiv. M.

Ft. haustus quamprimùm sumendus et 4$^{\text{tis}}$ horis repetendus, nauseâ aut singultu urgente.

℞ Emplast. Plumbi ℥ss.
Olei Olivæ ʒvj.
Olei Pini Sylvestris ʒj.
Balsam. Peruv. ʒss.

M. S. A. ut fiat unguentum pro vulnere, super linteum lotione madidum, applicand.

2. State the proportions of the materials, temperature of the water, and time ordered in preparing the following infusions:—Anthemidis, Cuspariæ, and Digitalis, P. B.
3. Describe and explain the P. B. process for preparing Fel Bovinum Purificatum, and suggest any improvement that might be made.
4. State the proportion of Opium in each of the following Pharmacopœia preparations:—Enema, Emplastrum, Pil. Ipecac. c. Scillâ, Ung. Gallæ c. Opio, and Suppositoria Plumbi Co.
5. Describe the mode of preparing the Syrupus Sennæ P. B., and state any improvement that may seem desirable in the directions.

The President, in addressing Mr. Conder, winner of the Pereira Medal, said this was the highest reward which the Society could bestow, but he must not regard it as being in itself the end and aim of his studies; if so, the object sought in the bestowal would be frustrated. Rather should it be regarded as a milestone in life's pathway, showing that something had been achieved, while yet much more remained to be accomplished;—at the same time in the thought of him whose image was on the medal,—of what he had done, and how he had laboured to investigate truth,—an additional stimulus would be given to renewed exertions in the cause of pharmacy, so that British pharmacy might shine with as great a lustre as did the memory of that illustrious man, whose name was thus commemorated, in the minds of all students of pharmacology.

He then announced that the second prize (Miller's 'Elements of Chemistry,' 3 vols.) was awarded to Mr. J. W. G. Candy, who, however, was not present to receive it.

JACOB BELL MEMORIAL SCHOLARSHIPS.

In reference to the competition for these Scholarships for the ensuing session, the CHAIRMAN announced that the Senior Scholarship had been awarded to Mr. W. Foster, and the Junior to Mr. Charles Fryer.

The questions for the Examinations were as follows:—

Junior.

ARITHMETIC.

1. Write down in words at full length, 11110101.
2. Write in figures the sum of eleven thousand eleven hundred and eleven.
3. Add $\frac{4}{5} + \frac{6}{7} + \frac{10}{11}$.
4. From $\frac{5}{8}$ of a shilling take $\frac{1}{80}$ of a pound.
5. Find value of $\frac{2\frac{1}{3} + 1\frac{5}{6}}{3\frac{3}{4} - 2\frac{1}{2}}$.
6. Reduce 2 qr. 14 lb. to the decimal of a cwt.
7. Multiply ·907 by ·0025.
8. Divide 5·714 by 8275.
9. If I give 16 men £45 for 28 days' work, what must I give, at the same rate, to 20 men for 35 days' work?

LATIN.

1. Eodem die ab exploratoribus certior factus, hostes sub montem consedisse millia passuum ab ipsius castris octo; qualis esset natura montis et qualis in circuitu ascensus, qui *cognoscerent* misit. Renunciatum est facilem esse. De tertia vigilia, T. Labienum legatum pro-Prætore cum *duabus* legionibus et iisdem ducibus qui iter cognoverant *summum* jugum montis ascendere jubet quid sui consilii sit ostendit. Ipse de quarta vigilia eodem itinere, quo hostes *ierant*, ad eos contendit; equitatumque omnem ante se mittit. P. Considius qui rei militaris peritissimus habebatur et in *exercitu* L. Sullæ et postea in M. Crassi fuerat, cum exploratoribus præmittitur.
2. Parse those words which are printed in italics.
3. Give the rules for the comparison of adjectives. Compare *parvus*, *audax*, *senex*, *intra*, *pius*, *similis*, *graviter*.
4. What are the rules for the three Concords?
5. Give the derivation and meaning of the prefixes *ter*, *sesqui*, *proto*, *per*, *dis*, *hydro*, *hypo*.

ENGLISH COMPOSITION.

Write remarks upon one of the following subjects:—

The Advantages of Civilization.
The Nature and Excellence of the British Constitution.

CHEMISTRY.

1. How would you prepare a Solution of Sulphurous Acid, and by what method convert this into Sulphuric Acid?
2. Give a process for converting the metal Iron into its Magnetic Oxide.

Senior.

ARITHMETIC.

1. Reduce $\frac{378}{576}$ to its lowest terms. Multiply it by $\frac{3}{4}$ and divide the product by $\frac{1}{3}$.
2. Divide $\frac{2+3\frac{1}{2}}{4-3\frac{1}{3}}$ by $\frac{4+3\frac{1}{2}}{6-3\frac{1}{3}}$.
3. Find value of $\frac{3}{4}$ of a guinea + $\frac{7}{8}$ of 5*s*. + $\frac{3}{5}$ of 7*s*. 6*d*. − $\frac{3}{4}$ of 2*d*.
4. Reduce 16*s*. 7$\frac{3}{4}$*d*. to decimal of a £.
5. Divide 79 by 3965.
6. If $\frac{3}{4}$ yd. cost £$\frac{7}{8}$, what will 5$\frac{1}{4}$ yds. cost?
7. What is compound interest on £500 for 3 years at 5 per cent. per annum?

LATIN.

1. Translate the following into English:—Celsus, Book I. "Si quis vero stomacho laborat, legere clare debet, post lectionem ambulare tum pilâ, vel armis aliove quo genere quo superior pars movetur exerceri. Non aquam, sed vinum calidum, bibere jejunus, cibum bis die assumere; sic tamen ut facile concoquat uti vino tenui et austero, et post cibum frigidis potionibus potius. Stomachum autem infirmum indicant pallor, macies, præcordiorum dolor, nausea et nolentium vomitus, in jejuno dolor capitis. Quæ in quo non sunt, is firmi stomachi est. Neque credendum utique nostris est qui, cum in adversa valetudine, vinum aut frigidam aquam concupiverunt deliciarum patrocinium, in accusationem non merentis stomachi habent."
2. Give the chief parts of the following verbs, and point out English words derived therefrom:— Frangere, Rumpere, Cingere, Coquere, Aperire, Incumbere, Sanare.
3. Put into Latin:—He will lose some time.—I would rather be in good health than be rich.—Hunger is the best sauce.—He sends ambassadors to sue for peace.
4. Give the English of Audiveritis, Tulistis, Regetis, Amabere, Velint.
5. What are the three roots from which the tenses are formed?

ENGLISH COMPOSITION.

1. Write remarks upon one of the following subjects:—
   Advantages of the study of History.
   Courage.

CHEMISTRY.

1. Describe the properties of the metal Chromium, of its Oxides and Chlorides.
2. Give characteristic tests for the compounds of Sodium, Potassium, and Lithium, and state how their separation may be effected from a mixture of the three.
3. Describe the Alcohols of the Ethyl and Methyl Series, with processes for obtaining them.
4. State the principle on which Spectrum Analysis is based, and give a method for its application.

Senior or Junior.

BOTANY.

1. Enumerate the different organs of which a Flower consists, beginning from the outside.
2. In what part of the plant is the Pollen Grain developed? What are its functions, and how performed?
3. Describe the structure of an Exogenous leaf.
4. Of what parts does the seed of a Dicotyledonous plant consist?

MATERIA MEDICA.

1. From what plants are the following drugs obtained?—Gamboge, Iceland Moss, Elm Bark, Chamomile Flowers, Virginian Snake-root, and Croton Oil.
2. Mention the principal drugs derived from the Orders *Leguminosæ*, *Ranunculaceæ*, and *Cruciferæ*.
3. Describe how Opium is obtained.
4. Of what drug is a volatile alkaloid the active principle? How may the presence of this alkaloid be easily rendered perceptible?

CHEMISTRY AND PHARMACY.

Dr. **Redwood** was then called upon to state the result of the examinations in the Chemistry and Pharmacy class. He said the attendance had been unusually large, which was no doubt attributable to the operation of the Act recently introduced on the subject of pharmacy. It might naturally be expected as the result of this alteration in the law that a considerable number of young men would present themselves who had not had the original preparation requisite for such a scientific training as they now found it necessary to obtain, in order to give themselves a creditable position as pharmacists; but notwithstanding this, there had been no ground for complaint of a deficiency in the attendance of young men very well prepared to take a creditable position in the examinations. It was no empty compliment, nor was it any slight commendation to say, as he and his colleagues had been accustomed to say, that the students of that institution bore a very favourable comparison with those of like age in any similar educational establishment. It seemed to him that the preliminary training of pharmaceutical students was calculated to bring forth those qualities which enabled them to make good use of the educational advantages which were there afforded to them, for he always found the pupils diligent, methodical, and observant. In his class eight had competed for prizes, and three had received some mark of distinction. That the number of competitors was not greater was due, he believed, to the fact that all the best men in the class did not enter the lists at these examinations. It would generally happen that in a large class there would be, perhaps, some half-dozen who might be expected to become first prizemen, but it rarely or never happened that all these competed. There appeared to be a sort of "natural selection," as the result of which the competition was practically abandoned to one or two who were known amongst their associates to be likely to obtain the coveted distinction, and a few of smaller attainments might go in with them. The selection thus made was generally a good one, but still he regretted that the number of competitors was not larger, and it must not be supposed that the names announced comprised all those in the class who would be deserving of a similar distinction. The first prize had been awarded to Mr. John Ingham, whose answers were considered of the value of 90 out of a possible maximum of 100; the second prize fell to Mr. Edward Alfred Webb, whose work was of the value of 81 marks; and the third to Mr. Joshua E. Barnes, with 66 marks.

The questions were as follows:—

1. Define the terms *Density* and *Specific Gravity*. Explain the theorem of Archimedes relating to the loss of weight in a body when immersed in a liquid. Describe the specific gravity bottle, and point out the modifications in its construction which have been suggested, stating the special objects for which such modifications are made.
2. Describe the Hydraulic Press; explain the principle of its peculiar action, and state the advantages and disadvantages attending its use as compared with the screw-press.
3. What physical changes are effected in Zinc by the application of different degrees of heat to it? How would you proceed in reducing zinc and tin to a finely granulated state?
4. Describe minutely the way in which the ingredients named in the following prescription should be mixed for the production of an emulsion:—

℞ Bals. Copaibæ f ʒiij.
Pulv. Acaciæ ʒj.
Aquæ destil. f℥vss.
Misce.

5. Explain the action of the Siphon.
6. Describe *Sulphur*, its sources, the means by which it is purified, its allotropic modifications, and its principal combinations with hydrogen and oxygen.
7. Describe the Pharmacopœia process for the preparation of *Diluted Hydrocyanic Acid*, showing the decompositions which occur in the process, and the method by which the strength of the acid is determined.
8. Describe some of the processes by which artificial organic bases are obtained, and specify two or three bodies produced by such means.

The **Chairman** presented the prize and certificates to the successful candidates with a few appropriate words.

MATERIA MEDICA AND BOTANY.

Professor **Bentley**, in presenting his report touching the Botany and Materia Medica Class, said that in the year 1842 he was a student of that Society, and received the first prize ever given in a school of pharmacy, and he could never look back but with pleasure to that occasion when he received it at the hands of William Allen, a name well known not only in the field of science, but also as a great philanthropist. In the year 1848–9 he made his first report as Professor of Botany at that institution, when he was able to speak in the very highest terms of the regularity of attendance, the good conduct and diligence of the students, and from that time to the present he had uniformly to make the same report. On the present, as on former occasions, he had the pleasure of saying that the students of that institution, as regarded regularity, diligence, and perseverance, bore a very favourable comparison with those of any other establishment in London. During the twenty-one years for which he had had charge of the Botany Class, the numbers attending it had very largely increased, there having been during the past session 132 students. This was a very gratifying fact, and spoke well for the spread of scientific education. With regard to the prize competition, a good deal of what he had intended to say had been anticipated by Professor Redwood. It was generally the case that when young men associated together they formed a pretty accurate estimate of each other's capabilities, and refrained from entering a competition in which they felt sure they would not be successful in winning the first prize. As he had said last year, this was a great mistake, and he had been pleased to find some increase in the number of competitors, but still not so much as there might have been. He would again repeat, that it was not the prize itself which was the great advantage, honourable as the distinction might be; the great advantage was the amount of knowledge acquired by the student in working up for the examination, and it must be remembered that although there was only one senior prize, certificates of honour and certificates of merit were given to all who gained a sufficient number of marks. The first prize had been awarded to Mr. W. H. Smith, a certificate of honour to Mr. J. Ingham, and a certificate of merit to Mr. F. Beasley. There was both a *vivâ voce* and a written examination. In the *vivâ voce* the maximum number of marks attainable being 33, one had obtained 30, and the other two 31, whilst of a maximum total of 133, Mr. Smith had gained 117, a very high percentage indeed. Of Mr. Ingham, who had already taken one prize, he could also speak in terms of the very highest praise, and Mr. Beasley also was well deserving of the certificate of merit.

The questions were as follows:—

1. Describe the structure of Epidermal Tissue and its Stomata.
2. Describe the physical and chemical characteristics of Chlorophyll. State where it is found, the conditions favourable to its development, and the changes which it undergoes at different seasons of the year.

3. Describe generally the internal structure and external appearance of a Monocotyledonous Stem.
4. Define the following:—Involucre, Thalamus, Receptacle, Disk, Cyme, Capitulum, Pappus, Gynandrous, Loculicidal, Septicidal, Follicle, and Legume.
5. Enumerate the officinal plants of the Ranunculaceæ. Describe the physical and chemical characteristics of the Rhizome and Rootlets of *Helleborus niger*, and show how they may be distinguished from the corresponding parts of *Actæa spicata*.
6. What is the botanical source of Gamboge? What is its geographical source? How is it obtained, what are its physical and chemical characteristics, and how may its purity be ascertained?
7. Describe the physical characteristics of *annulated*, *striated*, and *undulated* Ipecacuanhas. Mention their botanical and geographical sources, and to what their medical properties are due.
8. What are the botanical and geographical sources of Copaiba? Describe its physical and chemical characteristics. Mention the substances used to adulterate it, and the means of detecting such adulterations.
9. Distinguish the *Solanaceæ* from the *Atropaceæ;* the *Compositæ* from the *Dipsaceæ;* the *Amaryllidaceæ* from the *Iridaceæ;* and the *Labiatæ* from the *Scrophulariaceæ.*
10. Give the essential characters of the following Natural Orders, and enumerate the officinal plants which they respectively contain:—Papaveraceæ, Cucurbitaceæ, Rutaceæ, Convolvulaceæ, Oleaceæ, and Melanthaceæ.

The CHAIRMAN having presented the medal and certificates,

PRACTICAL CHEMISTRY.

Professor ATTFIELD was called upon for his report of the Practical Chemistry Class. He said that, during the last session, there had been eighty-eight students at work in the laboratory, most of them from ten o'clock to five daily,—some only half that time,—for periods varying from two to ten months, the average term being a little over five months. The students worked independently of each other, though on one common plan, namely that of pulling to pieces and putting together every chemical substance employed in medicine. They did this not necessarily that they might become builders or breakers—manufacturers or analysts—of chemical structures, but that they might perfectly comprehend the grand principles on which the great edifice of chemistry was raised, and thus be able to apply those principles in the daily practice of pharmacy, where chemistry was encountered in nearly every operation. With regard to the manner of study, an inspection of the laboratory would probably convey more information than any description, and he invited any one at the close of the meeting to pass upstairs and see for themselves. One new feature in the course of instruction had been introduced last session, which he might briefly mention. This was the organization of a system of class examinations. Twice a week he collected together those who had progressed to about the same extent, and examined them on given chemical subjects, for he had found that, although in a practical chemistry class one was brought into contact with students every hour of the day, and so could make sure of work being performed, still, without some system of examination, he could not feel sure that men *understood* what they were doing, and the principles on which they were working. These examinations had been remarkably well attended; in fact, the students found that they were thus prepared to go before the Board of Examiners with confidence of success both for the Major and Minor examinations, and hence, the system became highly popular; he should continue the examinations during the ensuing session.

The competition for prizes was of an entirely practical character. Each competitor was expected to work at a bench for two days, from ten o'clock to five, and analyse or manufacture something, the use of books or memoranda being permitted. For instance, they had to analyse a solution containing any common metallic salt used in medicine, and to do the same with regard to a powder. Again, different kinds of food were mixed together and poison added, and the student was expected to discover what the poison was. Then there were quantitative operations to be performed, for which, as they took a good deal of time, a whole day was allowed: thus a solution of arsenic or of perchloride of iron had to be analysed, and the exact quantity of the substances determined. The results had been reported to the Council, who had awarded the prizes accordingly, the first going to Mr. Ingham. This gentleman, having been Junior Bell Scholar last year, might have been expected to do great things, and it was gratifying to see, as was shown by the prizes he had taken, that these expectations had been fully realized; in the laboratory-class he had obtained the full number of marks possible. Mr. Iredale came next. If this gentleman had not met with an accident in performing one of the operations, he would have trodden very closely on the heels of Mr. Ingham. Messrs. Hicking, Wyley, and Histed, had gained between 60 and 70 per cent. of the accorded marks, and richly deserved their Certificates of Merit.

The questions were as follows:—

1. The "Solution" given to you may contain any of the ordinary metallic salts used in medicine; analyse it, and state the results.
2. The accompanying "Powder" is also a mixture of common metallic salts; examine it, and report your conclusions.
3. You are furnished with what you may regard as a "Vomit" suspected to contain one of the following poisons:—mercury, arsenic, antimony, lead, copper, oxalic acid, hydrocyanic acid; which is present?
4. A specimen of "Urine" is placed before you; is it morbid or healthy?
5. "Solution of Arsenic." Ascertain by volumetric analysis how much arsenic (As_2O_3) may be obtained from 100 parts by weight of this liquid.
6. "Solution of Perchloride of Iron." Estimate, gravimetrically, the percentage of Iron in this preparation.

The Prizes having been bestowed by the Chairman,

HERBARIA.

Professor BENTLEY reported the result of the competition for the prizes and certificates offered by the Council for Herbaria of British plants, prizes which had been instituted for the purpose of encouraging the study of botany, especially amongst apprentices and students in the country. Botany, until recently, had not been a favourite study, but he was happy to think that a reaction in its favour was now setting in, and attention was now being called to it as an important branch of study—by such men, for instance, as Professor Huxley in a recent number of 'Macmillan's Magazine.' He believed that in the course of a year or two botany would find a place in the course of instruction at nearly all the large colleges in England, and already great exertions were being made, not only for teaching it to young men but also to ladies, at South Kensington. Five Herbaria had been sent in on the present occasion, three of which were particularly meritorious. The silver medal had been awarded to Mr. H. W. Jones, of Birmingham, who, though busily engaged as an apprentice, had found time to collect, in the space of twelve months, 470 plants, preserve them, arrange them, and mount them in the beautiful way which a few specimens displayed at the end of the room would show. The bronze medal was awarded to Mr. Gerald F. Stoodley, of Crediton, for a collection of nearly 300 plants, and a certificate of merit was given to Mr. R. T. Linton, of Edinburgh.

The CHAIRMAN then called upon Mr. Henry Deane, F.L.S., to deliver the—

INTRODUCTORY ADDRESS.

It is a pleasant custom, and one which is, or ought to be, productive of kindly relations between the students of an institution like the Pharmaceutical Society and those under whose direction they are to pursue their course of instruction, that they should meet face to face at the beginning of a session, on the broad ground of a common friendship dictated by a common interest. Were any other relation than this implied, I dare not have appeared before you in the character of mentor this evening, but, yielding to no man in affectionate regard for my younger brethren entering a laborious and ill-paid profession, I could not with a clear conscience have declined to accept the duty laid upon me by my colleagues, though I might secretly doubt their wisdom in the selection of a spokesman. If I have any claim of my own upon your attention beyond that which an abiding sympathy confers, I must lay it to the fact that I have endeavoured ever since the foundation of the Society to advance the cause of pharmaceutical education, and that I now begin to see around me results neither trifling nor insignificant from the labour which I have watched during twenty-eight years. In the long, persistent effort of which these results are but the crown, I have taken a share, though it may be only a small one; and if my observations on the present occasion have little of novelty, and less of exciting interest, you may be disposed to bear with them kindly for what value they may possess as the dictates of an experience extending over the whole of this period.

Let us ask ourselves, to begin with, what progress have we made during the year in which the extended powers of the Society have been in operation? From our own point of view, has the condition of pharmacy been advanced? On the other hand, are we nearer to a recognition on the part of the public of that professional status to which we aspire? These are questions for ourselves individually; and, if each of us can answer that he has done his best for the honour of the body to which he belongs, we need not doubt that we have collectively progressed. The estimation in which we are held by on-lookers will follow naturally the efforts made by ourselves to attain a higher standard. Let us bear in mind that the atmosphere of science by itself does not engender professional feeling;—that the grand ethical maxim which determines the qualification is but the second great commandment, "Thou shalt love thy neighbour as thyself," in its bearing upon our daily conduct towards others engaged in the same avocation;—and that we shall attain to honour only as we shun dishonour.

We have already seen how large an amount of good may be expected from the Pharmacy Act of 1868, but we must bear in mind the fact that the future depends upon ourselves far more than on legislative interference; and to no single portion of our functions have we so much cause to look with solicitude as to our examinations. In the earlier years of our existence as a corporate body the passing of examinations was optional, and therefore comparatively few availed themselves of the advantages consequent on the systematic training they involved; and thus they became in reality an evidence of a thirst for knowledge, quite as much as a test of the amount of information acquired. And we have precisely the result which might have been anticipated: the men who had the wisdom to see the advantage of submitting to what was then a voluntary ordeal, and the courage to face it, now stand in the front rank of our profession, as men similarly actuated will always do, whatever vocation they adopt. The growth of public opinion and the steady increase of enlightenment amongst those practising pharmacy is shown in a remarkable manner by a reference to the number presenting themselves each successive year for our various examinations. Indeed so regular was the increase up to the time of the passing of the late Act, that there seemed a *primâ facie* ground for the opinion, urged by several thoughtful members, that there was but little need for additional parliamentary powers, and that it only required time, and perseverance in the course which had been followed since the commencement of the Society, to obtain a footing for scientific pharmacy, as satisfactory as any legislation could bring about. This position might have been easily defended from the narrow point of view which embraced only the interests of the examined men, but nothing short of the compulsory examining powers now obtained could have raised the Society to its present position as a national institution, and no smaller instalment could have satisfied its aspirations for the future.

I am disposed, as an old member of the Board of Examiners, to dwell at some length on matters which have forced themselves on my notice in connection with this particular department. The most onerous duties of the Board during the past twelve months have consisted in the special examinations arranged for those who, as assistants before the date of the Act, had a fair claim for a certain amount of indulgence. Some reflections have been thrown, from time to time, on this "Modified" test, but it must be remembered that the class who alone could take advantage of it, had a distinct vested interest in the business, and consequently possessed rights which the Society was bound to respect. I need not before an assemblage of students preparing themselves for the higher examinations, dwell on the provisions of this particular ordeal, but I must express a general acquiescence in its justice, and insist upon the fairness of the standard of practical information upon which it is based. My present object is rather to dilate upon the deficiencies which I have observed in the course of my duties in conducting the examination of regular students, and to point out, if I can, the causes whereby they originate, and the course by which they may be avoided. The defects we have most to deplore, especially in junior students, are attributable to insufficiency of early education, and especially to the neglect of classical knowledge. It is a fact patent to all who have been brought in contact with apprentices or pupils, that youths with a desire for a gentler calling than that of the common tradesman, are placed in situations in which they are supposed to learn pharmacy with but scant allowance of that mental training which is regarded as essential to a gentleman; and whilst the new regulations of the Board of Examiners necessitate a larger and more liberal education in future, it is still worth while to inquire how those who have already cast in their lot with us, may qualify themselves for the position which they ought ere long to be able to assume. To such as may feel themselves to be within this category, I would say, you are still young, and if you will give but a portion of each day to the study of English literature and of those ancient languages which are the delight of intellectual men, you may yet make for yourselves a sound basis for future learning. It is not the mere acquaintance with a Latin or a Greek author that is of importance, but the humanizing influence the study brings with it, and the widened mental capacity which is its invariable result. Your time so employed may not seem at the moment to yield a return adequate to the labour involved, but, believe me, the recompense is certain and manifold, and will endure for your whole after life. No bread cast upon the waters will more surely yield its increase in the future. With reference to Latin in particular, it is an integral and necessary portion of your education; as practical pharmaceutists, you cannot safely neglect it if you would, and it is surely worth while to pursue it as a source of enjoyment rather than as task-work. Were the study of Latin undertaken in a right spirit, the amount of time that is often spent in gaining that modicum of knowledge which so frequently fails to serve even the purposes of the examination-room, might be made instead to yield a solid groundwork, not deep or profound, but compact and full up to its limit and serviceable to higher ends than the mere translation of prescriptions.

A foundation of common "school-learning" must be laid before a student can make satisfactory advances into the special branches of knowledge which constitute technical education in any of its developments. Our "preliminary" or "classical" examination embraces these subjects, and is intended to secure a sound elementary acquaintance with the various branches comprised in what is termed a liberal education.

The peculiar advantages offered by this Institution exist in the variety of its facilities for the study of those departments of science, which collectively are comprised in the word Pharmacy,—and may be said only to be properly available when the preliminary stage is passed. Lectures, demonstrations, and laboratory practice are the primary elements of the curriculum you are commencing, but they form only a small portion of the opportunities you may enjoy, if you will supplement the instruction of the class-room by reading and observation. In this aspect it is impossible to over-estimate the advantage of a MUSEUM and LIBRARY like that within your reach; but so long as the former is to you a mere collection of substances used in medicines or the arts, and the latter only an assemblage of well-bound and well-arranged volumes, you can scarcely be said to be aware of their existence. My observation would lead me to believe that neither the Library nor the Museum are sufficiently used by our students. In the Library you have opportunity of direct reference to standard authors whose works are too costly for the ordinary reader to purchase or too rare to be found in private collections. Only those who know the delight of tracing an oft repeated observation to its original author are aware of the value of information obtained first hand. By this I do not mean to insist on the study of quaint and now perhaps obsolete volumes like Gerard or Culpepper, Gesner, Pomet, or Parkinson,—these may form amusement and instruction for leisure hours in after life,—but rather to some of the great authors who lived immediately before the days of manuals and text-books, to whom too little honour is now accorded. I may be wrong in the estimate I set upon works which were the companions of my early days, but I would ask any one who may be disposed to question this dictum, where he will find a book of recent publication with the same amount of instruction so pleasantly given as the 'Pharmacologia' of Dr. Paris, a work which has been quoted with or without acknowledgment by half the more modern writers on the subjects of which it treats. This is but a type of the literature that I would recommend to your notice; time precludes my enlarging on the subject, else there are a dozen authors in the same category I might cite as worthy your reverent study.

A museum is only of value to the student in so far as it receives his systematic attention. It is useless to walk round a Materia Medica cabinet, observing merely the exceptionally fine specimens which attract the eye in passing, and regarding the whole as an assemblage of curiosities. The true value of a collection like that in the possession of the Society, lies in the opportunity it affords for illustrating the subjects of your reading. Study the specimens series by series, book in hand:—impress by visual observation, facts too readily forgotten when learned by reading only:—endeavour now, whilst your observing powers are most active to collect that sort of knowledge which will enable you to detect differences in the external appearances, in the physical characters, and in the structure of the substances with which you will be most concerned in your occupation as pharmaceutists. You will do this nowhere so well as in a Museum like ours, where, thanks to the labours of the late Dr. Pereira, the late Mr. Herring, Mr. Morson, Mr.

Squire, Professor Bentley and many others who have lent willing aid, you have an assemblage of specimens possibly unequalled in Europe.

The exercise of the observing faculties you will thus be led into, forms the natural antithesis to that waste of energy you term 'cramming.' I can scarcely trust myself to speak of a process so dishonest in itself, so unworthy of any rightly-minded student, as that implied in the significant, if somewhat inelegant epithet: indeed, I do not know that a word more appropriate from the very disgust which it occasions, could be coined to meet the case.

It is too often as a fancied antidote to neglect of duty in the early or mid-portion of a student's career that this process of cramming is resorted to, and it may thus be regarded as a natural sequel to idleness. Montaigne, in one of his charming essays, has well described the state of mind induced by laxity of mental discipline. He says, "As we see ground that has lain fallow, if the soil is fat and fertile, produce innumerable sorts of wild herbs that are good for nothing, for want of being cultivated and sown with seeds proper for our service; even so it is with our minds, which if not applied to some particular subjects to check and restrain, rove about confusedly in the vague expanse of imagination." Above all things avoid this desultory half-hearted work which is in reality but idleness. Learn a little, if you have not opportunity to learn much; but whether it be much or little, learn with mastery. The rapid acquirement of superficial knowledge, the tax of the memory for a temporary purpose, to a degree beyond the capacity for assimilation, cannot be of any permanent benefit. The recollection of this fact will do much to remove the temptation to trust in a great exhaustive effort for results that only diligence and constancy will rightly ensure.

As to the mode in which you pursue your studies, accept the advice of your professors, and follow it out with your whole heart. You can show your appreciation of their instruction in no way better than by asking for more. They have no interest beyond your advancement; their crown is in your intellectual prosperity. Do not omit, on the fancied ground of intrusion, to ask for explanation of whatever you do not rightly comprehend in connection with their discourses. Nothing is so discouraging to a lecturer as the lack of earnestness in his audience, which, if it exists, manifests itself in a hundred different ways. The look of submission rather than enjoyment, the furtive observation of the timepiece, unpunctuality in entering and eagerness to leave the lecture-room, are symptoms that drain the enthusiasm of a teacher. If in the presence of these discouragements a lecturer may appear to fail to carry his class with him, the fault is chiefly their own. If your own interest is not sufficient to stimulate you to the endeavour to obtain the largest amount of advantage during this most important period of your life, recollect that you are not alone in the world, and that you owe much to those by whose means you enjoy the advantages before you. No good was ever done in the world without self-denial, the bitterest of Christian virtues in practice, but the one that soonest of all yields sweetest fruit.

Do not suffer yourselves to be led away from what you know to be right by associates, well-meaning though they may be, who, nevertheless, do not show by their conduct that they have grappled with the great problems of their existence. "Be very circumspect," says an old author, "in the choice of thy company. In the society of thine equals thou shalt enjoy more pleasure, in the society of thy superiors thou shalt enjoy more profit," and this is equally true in its moral and intellectual application.

In the address that was delivered in this room, a year ago, prominence was given to the importance of the study of natural objects and natural phenomena, as a corrective to the habit of mind engendered by application to the purely physical sciences, and more especially to the hardening materialistic influence of commercial cares. I may, without impropriety, insist on the truth of what was then urged. My own business cares have been as varied and unceasing as those which fall to the lot of most men. Few have had less time or opportunity for the prosecution of such studies, or for observing nature away from the haunts of men, and possibly it is for this very reason, that the bye-hours which I have been able to devote to them have been amongst the most precious of my life, and have afforded that mental relief which is essential to a healthy condition of the intellectual faculties.

It is needless for me to dwell at length on a proposition that seems so self-evident, and I should scarcely have thought it necessary to introduce the subject at all, but for the fact that such occupations are neglected on the imaginary ground of want of time. A country stroll of half an hour will yield material for thought and investigation available for many a day.

"For love of nature dwells not in the heart
Which seeks for things beyond our daily ken,
To bid it glow. It is in common life
And objects most familiar, we find
Exhaustless matter for our privilege—
Our glorious privilege, of reading God
Amid His bright creation."

In these pursuits, rather than amongst the distracting influences termed amusement, you will find your healthiest recreation. And in the hours of weariness that fall to the lot of every man, you will find in them solace and comfort that will amply repay, if that were necessary, any labour you may bestow in making yourself familiar with things of nature.

I seem to have occupied your time in the repetition of mere truisms, and to have told you only what has been better said times without number; and after all, what is there that any of us can add to that broad scheme of moral discipline, which was propounded eighteen hundred years ago? Strive to live up to that standard, and insofar as you succeed you will attain to truest wisdom.

For my own shortcomings I would apologise in the words of the worthy puritan Francis Quarles; and strive to justify the insufficiency of my homily by its good intentions. I devoutly trust that, "If it adde nothing to your well-instructed knowledge, it may bring something to your well-disposed remembrance; if either *I* have my ends, and *you* my endeavour; the service which I owe and the affection which I bear you challenges the utmost of my ability; wherein if I could light you but the least step towards the happinesse you ayme at, how happy should I be? Go forward in the way which you have chosen; wherein, if my hand cannot lead you, my heart shall follow you; and where the weaknesse of my power shows defect, there the vigour of my will, shall make supply."

Dr. GREENHOW said he rose, by request of the President, to propose the cordial thanks of the meeting to Mr. Deane for the admirable address they had just heard. He was sure that the younger members of the audience could not possibly have received better advice, and they need only follow it out during their course of study in order to ensure their passing the examinations successfully, and rendering themselves well fitted to discharge their future duties in life. He felt that, unprepared as he was for the President's calling upon him, he had in fact very little further to say on the occasion. At the same time, he could not refuse to speak a few words when called upon, as it so happened that he held a certain position with reference to the Pharmaceutical Society, having been appointed, under the Act of 1868, Government assessor to their examinations, with the view of ascertaining that those examinations were such as would render the gentlemen who passed them competent and safe persons to be entrusted with the important functions they undertook in becoming pharmaceutical chemists. It would obviously be out of place here for him to go into details, or to say anything to forestall the report which it would be his duty to make to the Privy Council; but he might, without impropriety, observe that he had seen with satisfaction the practical and searching manner in which the examinations were conducted, and he had no doubt that, as time went on and the Society was able to increase the stringency of the curriculum, the results of the examinations would become more and more important. He must here refer to one point which had been touched upon by Mr. Deane in his address,—he meant the necessity for a certain amount of classical knowledge. Latin at least was indispensable in a strictly business point of view for pharmaceutists, especially as the members of the profession to which he had the honour to belong did not always write so legibly as could be desired. He did not know how they had contrived to collect such a number of almost illegible prescriptions as he had seen in that building, but it certainly required a very competent acquaintance with Latin to decipher them. Pharmacy, though not strictly a branch of the medical profession, was a most important auxiliary to the great art of healing; and he believed that the additional powers and responsibilities recently conferred upon the Pharmaceutical Society had been given just at the right time. Their voluntary examinations had already raised the standard of pharmaceutical knowledge, and, now that these had been rendered compulsory, there was every prospect that the higher standard would become general throughout the country. And, lastly, he must say a word on behalf of his own profession. The importance of having prescriptions correctly prepared was very great; but although, as long as he had been in practice, there had always been houses, especially in London, where physicians could be certain of having their intentions carried out, it was not until comparatively recent times that they could place any such reliance on chemists in country places. He had always thought it hard that country medical practitioners should be compelled, after a long day's round of attendance on the sick, to sit down on their return home to dispense their own medicines; and he believed there was a growing disinclination among medical men to go through this drudgery themselves, and an increasing desire to be able to entrust it to chemists and druggists. He hoped, therefore, in due time, to see in every town and in all but the smallest villages a properly-qualified dispenser of medicines, to whom the medical men could safely delegate the making-up of their prescriptions.

Mr. **Deane** having briefly acknowledged the compliment paid him, the meeting separated.

BRITISH PHARMACEUTICAL CONFERENCE.

A meeting of the Executive Committee was held at 17, Bloomsbury Square, on the evening of Tuesday, Oct. 5th; Mr. J. **Abraham**, Vice-President, in the chair.

Several new Members were elected.

Messrs. Carteighe, Groves, Hanbury, Ince, and Stoddart, were elected a Committee of Publication for the 'Year-book of Pharmacy,' to be published in 1870.

Mr. J. C. Brough was elected Editor of the 'Year-book,' at a salary of £100.

The Committee accepted in trust Mr. Hills' liberal donation of fifty guineas, for the purchase of books for the libraries of chemists' associations in towns visited by the Conference. The Treasurer was requested to open an account in his books for this money, under the name of "The Bell and Hills Fund."

A grant of books to the value of ten guineas was made for the use of the chemists and their assistants in Exeter.

PROVINCIAL TRANSACTIONS.

BRISTOL PHARMACEUTICAL ASSOCIATION.

A meeting of the chemists and druggists of Bristol and its neighbourhood was held, September 20th, at the Philosophical Institution, Park Street. The meeting was numerously attended, and the following resolutions were carried with enthusiasm:—

"That an Association be formed and called the 'Bristol Pharmaceutical Association.'"

"That the object of the Association be the promotion of scientific pharmacy."

At subsequent meetings the scheme of the Association was more fully matured, and a Council consisting of the following gentlemen elected, viz., Messrs. Boorne, Boucher, R. B. Giles, R. W. Giles, Martin, Pitman, Player, Schacht, Stoddart, Stroud, Taplin, and Townsend.

The Council has since issued the following announcement:—

Bristol School of Pharmacy.

The Council have the pleasure to announce that they have made arrangements with Mr. Coomber and Mr. Leipner, the Lecturers to the Science Classes at Nelson Street, by which they are enabled to offer to their fellow members and associates the following complete course of instruction in chemistry and botany.

A course of thirty lectures by Mr. Coomber, F.C.S., on Inorganic Chemistry, every Tuesday at 8 P.M., commencing October 12th.

A course of thirty lectures by Mr. Coomber, F.C.S., on Organic Chemistry, every Thursday at 8 P.M., commencing October 14th.

A course of thirty lectures by Mr. Leipner, on Structural, Physiological, and Economic Botany, every Monday at 8 P.M., commencing October 15th.

A Course of thirty lectures by Mr. Leipner, on Systematic Botany, every Monday at 8.45 P.M., commencing October 15th.

At the conclusion of this series, that is in May next, an examination will be held in each subject, at which it will be expected that each student shall present himself for the subjects he has attended. In connection with that examination it is the intention of the Council to offer a series of prizes, of which further notice will be given.

Tickets for the entire series will be five shillings for members and associates, provided the holder agrees to present himself at the examination in May, if not, the fee will be ten shillings. The ticket will admit to either one, two, three, or the whole of the above series, but no smaller fee than five shillings will in any case be accepted.

Pharmaceutical Evening Meetings.

The Council also announce they have made partial arrangements for a series of monthly evening meetings, to be held by the kind permission of the Committee, at the Philosophical Institution, Park Street, to which members and associates are invited free. The following is the outline of the scheme:—

	Friday,	November 12th	Address by the President.
	"	December 10th	Lecture by Mr. Coomber, F.C.S.
*	"	January 14th	Pharmaceutical Papers and Discussion.
	"	February 11th	Lecture by
	"	March 11th	Lecture by Mr. G. Gillford.
*	"	April 8th	Pharmaceutical Papers and Discussion.
	"	May 13th	Lecture by

G. F. Schacht, *Hon. Secretary.*

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* Members and associates are invited to prepare papers containing original matter for these evenings, and to send a notice of their intention to read, with the title of their paper, fourteen days before either of the above dates.

HALIFAX AND DISTRICT CHEMISTS AND DRUGGISTS' ASSOCIATION.

A general meeting of the members of the above Association was held at their room, Mechanics' Institute, Halifax, on Wednesday, September 8th, Mr. Dyer, President, in the chair, who, in opening the evening's proceedings, expressed the pleasure he felt in seeing a more numerous attendance of members than usual, and hoped that a yet larger average attendance would be attained. The business of the evening would be devoted to the consideration of a scheme for the better and combined instruction of our assistants and apprentices in Latin, chemistry, pharmacy, and botany. It was useless to dwell on the imperative necessity of some efforts being made at once to supply this great want; he would only press on them to cordially act together, by which means only success could be attained.

The Secretary then stated that he had consulted with the Principal of Haley Hill College as to the formation of classes in the above subjects, and nothing could exceed the desire he expressed to meet the wishes of the trade. Mr. Jarmain, F.C.S., would teach an elementary class in chemistry to meet at 7.30 P.M., and an advanced class to meet at 8.30 P.M., on Thursday every week, and during the summer months he would take a class on vegetable physiology. Mr. Gibb would teach a Latin class every Tuesday evening to meet at 8 o'clock. He hoped that every principal would allow his young men the opportunity to attend these classes, for by these means the difficulty of passing the London examinations would be greatly removed.

The discussion of these plans was generally entered into, and Mr. Farr proposed that the Association avail itself of the opportunity thus offered, and give it their staunch support.

Mr. Jessop seconded the motion, which was carried.

The Chairman proposed, "That the members send the names of their assistants and apprentices who are willing to join this course to the Secretary during the ensuing week."

Mr. Shaw seconded the motion, which passed.

Mr. Shaw then offered to give a series of lectures on Materia Medica to the young men. The members expressed their thanks for this kind proposal.

Mr. Jessop then proposed that the Secretary do write to Messrs. Evans and Co., Liverpool, asking them to favour the Association with the gift of a Materia Medica cabinet.

Mr. Brooke seconded the motion, which was carried, when the meeting separated.

LIVERPOOL CHEMISTS' ASSOCIATION.

Annual Meeting—20th Session,

Held at the Royal Institution, September 30th, 1869; the President, Mr. J. F. Robinson, in the chair.

Mr. Albert Diaper, 51, Great George Street, and Mr. F. Buckham, 36, Oxford Street, were elected members, and Mr. Charles Jones and Mr. Thomas Sheldon, Associates.

The Secretary then read the Annual Report of the Council.

Annual Report—20th Session.

The year which has now passed, and which completes the second decade of the Association's history, has been one of continued progress; and your Council, in rendering an account of the various departments of the Association's operations, express their belief that a future of great usefulness may be confidently looked for. That this hope may be fulfilled, they call upon all the members to lend their aid, so as to enable this Association to maintain a high position among the societies of our town, and further the interests of the important calling so intimately connected with us. To raise the standard of pharmaceutical education, and thereby the status of pharmacists, and to unite in a bond of fellowship the scientific and the practical chemists of the town, are the objects of the Association, and in both it has had an inspiriting measure of success. Much remains to be done, and in the transition state in which pharmacy in England now finds itself, energetic measures are called for, in order that we may reap the full benefit of the legislative action recently taken.

During the past year 14 members and 6 associates have been elected, but as 25 names have been withdrawn in consequence of resignations, removals, or death, the number of members on the roll at present is 133.

To the majority of the members, the general meetings are the most important feature of the Association's work. Naturally the question of pharmaceutical education has formed the topic of several papers under present circumstances, but practical pharmacy has had its fair share of attention, and papers of scientific interest have also been read. It has not been found necessary during the session to devote a meeting solely to miscellaneous communications, but at the ordinary meetings much general information has been freely imparted. Your Council invite contributions of papers for the coming session, so that the interest of our fortnightly gatherings may be fully kept up.

The Library has been maintained in order and efficiency, and has been fairly used by the members. 290 books have been taken out during the session.

Your Council regret that their anticipations of being able to complete the re-arrangement of the museum by the end of the session have not been realized. The materia medica portion is almost completed, and in a short time its deficiencies will be supplied.

The school of pharmacy has been carried on during the session in a more complete manner than formerly. Classes for the study of botany and materia medica have been conducted, in addition to that of chemistry, and a few of the members of the Association have availed themselves of these advantages. The classes will be re-opened in the first week in October, and your Council hope that more young men will devote themselves to the systematic study of subjects so important to them.

The course of lectures on chemistry, by Mr. Davies, F.C.S., which has extended over two sessions, is now completed. They have been eminently satisfactory to your Council, and highly appreciated by all the members of the Association who attended them. An arrangement has been made with Mr. Davies by which a similar course will be delivered during the coming session.

A conversazione, given by the President, afforded a most pleasant reunion, bringing together many members who are rarely seen at our meetings, and, it is hoped, stirring them up to greater interest.

At the request of several members, your Council made arrangements for an excursion to Chester. Messrs. Walker, Parker, and Co. kindly threw open their works for inspection, and a very enjoyable day was spent. The only drawback was that so few of the members of the Association were present.

Your Council have much pleasure in informing you that the invitation from the Town Council and the learned societies has been accepted by the British Association, and that its meeting will be held in Liverpool next year.

Your Council also desired the Pharmaceutical Conference to hold its next meeting in Liverpool,—an invitation which was most cordially received and accepted. The coming session will therefore be marked by events of no ordinary interest, and your Council trust that the pharmacists of Liverpool and the neighbourhood will unite to make the Conference thoroughly successful.

Your Treasurer will present a report of the finances of the Association, which shows a credit balance of £1. 12*s*. 6*d*.

The following Members of Council retire by rotation, and are eligible for re-election :— Messrs. Robinson, Barber, Delf, and Jones.

The TREASURER then read the Financial Report:—

The LIVERPOOL CHEMISTS' ASSOCIATION *in Account with* JOHN SHAW, *Treasurer*.

Session 1868–9. *Year ending October* 1*st*, 1869.

Dr.	£.	*s.*	*d.*	*Cr.*	£.	*s.*	*d.*
To Balance from 1868	8	15	10	By Rent	10	10	0
,, 117 Members' Subscriptions	58	10	0	,, Insurance	1	6	0
,, 5 ,, ,, Arrears	2	10	0	,, Tea, Coffee, and Attendance	23	6	2
,, 11 Associates' ,,	2	15	0	,, Books and Periodicals	3	11	3
,, Fees from Students	1	0	0	,, Printing and Stationery	12	0	6
,, Microscope Fees	0	2	0	,, Directing and Delivering Circulars	5	15	0
,, Library Fines	0	3	6	,, Collector's Commission	2	3	3
				,, Mr. Davies for Lectures	5	5	0
				,, Mr. Turner, Librarian	4	0	0
				,, Secretary's Expenses	3	6	8
				,, Advertising Lectures	1	0	0
				,, Balance in hand	1	12	6
	£78	16	4		£78	16	4

Examined and found correct,
GEORGE BARBER, } *Auditors.*
FRED. D. DELF,

Mr. **Robinson** moved, "That the Reports as read be adopted, and, together with the Transactions of the General Meetings, the Laws and Bye-laws, the Catalogue of the Books in the Library, and the List of Members, be printed and circulated among the Members.

Mr. R. M. **Sumner** seconded the motion, which was unanimously carried.

The meeting then proceeded to the election of four Members of Council in place of Messrs. Robinson, Barber, Jones, and Delf. The result was that the retiring members were re-elected.

Mr. **John Shaw** then moved several alterations in the Laws, having for their objects the admission of all apprentices of chemists and druggists as eligible for election as Associates, and the election of Members at the half-session.

Mr. A. N. **Tate** seconded the alterations, which were unanimously adopted.

Mr. **Abraham** proposed, "That the best thanks of this meeting be given to the donors to the Library and Museum, and to the authors of papers during the session."

Mr. **Shaw** seconded the motion, which was carried unanimously.

Mr. A. N. **Tate** proposed, and Mr. T. F. **Abraham** seconded, "That the best thanks of this meeting be given to the Officers and Council, for their valuable services during the past session." Carried unanimously.

A vote of thanks to the President for his conduct in the chair concluded the business of the meeting.

MANCHESTER CHEMISTS AND DRUGGISTS' ASSOCIATION.

The first Annual General Meeting was held at the Memorial Hall, Albert Square, on Wednesday, October 6th; Mr. Councillor **Brown**, Vice-President, in the chair. Mr. **Benger**, Hon. Sec., read the Report of the Council, and Mr. **Woolley**, Treasurer, presented his statement of accounts.

"The First Annual Report of the Manchester Chemists and Druggists' Association.

"In presenting this, their first Annual Report, your Council have to congratulate you on the success which has attended the early days of the Manchester Chemists and Druggists' Association, not only on the numerical strength which it has attained, but also on the importance of the educational scheme which it has been instrumental in organizing.

"By the hearty co-operation of the Principal and Trustees of Owens College a pharmaceutical course has been established in connection with that institution, which cannot fail to be a great boon to the rising generation of chemists and druggists in this district.

"It will consist of courses of lectures on the subjects required by the examiners under the Pharmacy Act, viz.:—Chemistry, by Professor Roscoe, F.R.S.; Botany, by Professor Williamson, F.R.S.; Materia Medica, by A. Somers, Esq., Lecturer at the Royal School of Medicine; two Latin Classes, conducted by Professors Symonds and Wilkins; and a Practical Laboratory Class, under the direction of Professor Roscoe and Mr. Schorlemmer, F.C.S.

"Students can enter for either one or more of the subjects. The Professors in the several departments occupy such eminent positions that it would be superfluous to speak of their qualifications; and the fees demanded are so moderate as to be within the reach of all. Judging from the large attendance at the experimental courses of lectures delivered during the last session, your council have great confidence in calling on you to support, by every means in your power, the pharmaceutical courses at Owens College.

"The instruction is open, not only to those connected with your Association, but to the whole trade.

"It is perhaps desirable, for the information of those not conversant with our proceedings, to recapitulate what has been done during the past session.

"The preliminary courses of lectures before referred to were as follow:—Twenty Lectures on Chemistry, by C. Schorlemmer, F.C.S.; sixty-two students entered. Eighteen Lectures on Materia Medica, by Alexander Somers, Esq.; fifty-eight entries.

Twelve Lectures on Botany, by Professor Williamson, F.R.S.; twenty-eight entries.
Twenty Lessons in Latin, by J. Smith, Esq., B.A.; forty-nine entries.

"Five papers by members have been read at the monthly meetings, and a conversazione and exhibition of objects of interest was held in the Memorial Hall, on the evening of Tuesday, April 28th.

"Valuable donations of Materia Medica specimens have been received from Messrs. Evans and Lescher, Messrs. Hodgkinson, Stead, and Treacher, and Messrs. Southall, Son, and Dymond; and the 'Pharmaceutical Journal' has been forwarded to us monthly from the Society.

"An endeavour to induce greater uniformity in dispensing charges has been made with considerable success, and this example has been followed in many important towns.

"Your Association now numbers 280 Members and Associates.

"The Treasurer's statement of accounts will be found highly satisfactory. Your Council was anxious to keep the expenditure of the Association as low as possible during the first year; and with this object in view, somewhat meagre accommodation was afforded to the monthly meetings. The result, however, is a balance in hand of £90. 17*s.* 2½*d.*; thus providing increased means of usefulness for the future, and rendering some further outlay for rooms and other advantages justifiable and safe.

"If no other result had been obtained than establishing in the North of England a provision for the proper education of pharmaceutical students, your Association would have had just ground for congratulation at the end of this, the first session of its existence. Beyond this, it is fairly entitled to assume that, by its means, mutual good understanding and good will have been promoted, much valuable information has been conveyed, and a foundation laid upon which it is hoped eventually to raise an institution commensurate with the improved position and grave responsibilities of the pharmaceutical body.

"In conclusion, your Council would most urgently impress upon you the necessity for individual exertion to maintain and add to the usefulness of your Association, the objects of which, as set forth in your first rule, are 'to provide for the better education of assistants and apprentices, the mutual improvement of members, the general advancement of the interests of the trade, and the formation of a library, a museum, and a school of pharmacy for Manchester, and surrounding district.' It is in the power of every member to help forward one or more of these objects, either by the assistance and encouragement he may give to those in his employ, by the additions he can make to the common store of pharmaceutical knowledge in the contribution of papers for the monthly meetings, or by the donation of books or specimens for the Library and Museum."

The Treasurer in Account with the Manchester Chemists and Druggists' Association.
November 9, 1868.

Dr.	£.	*s.*	*d.*	*Cr.*	£.	*s.*	*d.*
To Balance of Fund for Preliminary Expenses	1	16	6	By Cash for Stationery, Stamps, Printing, and Advertising	29	8	8½
„ Cash from Mr. Lynche's Executors	8	10	8	„ Owens College Fees	23	12	6
„ Bank Interest	0	1	9	„ Keighley, Lea, and Co.	8	8	0
„ Donation from Hull Association	0	10	0	„ A. Somers, Esq.	18	18	0
„ Membership Fees	106	0	0	„ J. S. Smith, Esq.	10	10	0
„ Lecture Fees	64	15	6	„ Balance in hand	4	1	8½
				„ Balance in Bank	86	15	6
	£181	14	5		£181	14	5
„ Balance brought forward	90	17	2½				

Examined and found correct,
JOHN B. BATEMAN, } *Auditors*
JOHN STANDRING, }

The CHAIRMAN, in moving the adoption of the Report, said he thought the members had reason to be well satisfied with the statements laid before them. Some risk had been incurred in providing courses of lectures, but the result proved that the number of students who would attend had been rightly estimated, and although the fees charged had been exceedingly small, they had been nearly sufficient to pay the expenses, the Association having had to provide only a few pounds from its funds. He hoped the members would approve the course which the Council had adopted in allying themselves with Owens

College, a most excellent and extended course of pharmaceutical education had been thus established; but it was an experiment, and its continuance would depend upon the support it received.

Mr. J. T. SLUGG, F.R.A.S., seconded the adoption of the Report, which was carried.

Mr. Bagshaw, Oldham, and Mr. Wheeldon, Manchester, having retired from the Council, Mr. Barnaby, Oxford Road, Manchester, and Mr. Hargreaves, Oldham, were elected in their stead.

The various officers having been re-elected, Mr. SLUGG moved, that the subscription of Associates be reduced to 2*s*. 6*d*. The Association had now a good balance in hand, and he was anxious that young men should have no excuse for not maintaining their connection with it.

The motion was seconded by Mr. HAMPSON, and carried.

The CHAIRMAN then announced that monthly meetings would be held in the Memorial Hall, on the first Friday of each month, alternately at three P.M. and seven P.M. Mr. Alexander Somers, Lecturer on Materia Medica at Owens College and at the Royal School of Medicine, had kindly consented to give an address on the first meeting, Friday evening, November 5th, at seven, P.M.

A vote of thanks to the Chairman was then passed.

SUNDERLAND CHEMISTS' ASSOCIATION.

On Tuesday, October 19th, the first meeting of the winter session of the above Society was held in the Athenæum; WILLIAM THOMPSON, Esq., President, in the chair. It was numerously attended by members, their assistants, and apprentices.

A most interesting and instructive address was delivered by H. B. BRADY, Esq., of Newcastle-on-Tyne, urging on the young men the necessity of earnestness and perseverance in their studies, to fit them for the higher position they would be called upon to occupy in the future; and impressing on the members their duty of aiding and encouraging the efforts of the students, for whose improvement and welfare they are, to a certain extent, responsible.

After cordial votes of thanks had been passed to the Lecturer and the President, notice was given of the lectures and readings by the different members during the ensuing winter, and the meeting separated with mutual congratulations on the full attendance, and the promising signs of prosperity shown in the attention and earnestness of all concerned.

ORIGINAL AND EXTRACTED ARTICLES.

SOME REMARKS UPON THE COMPOSITION OF DR. COLLIS BROWNE'S CHLORODYNE, AS JUDGED BY ITS PHYSIOLOGICAL ACTION.

BY THOMAS STRETCH DOWSE, M.D.,

LATE REGISTRAR AND PHYSICIAN TO THE SKIN DEPARTMENT OF CHARING CROSS HOSPITAL.

In the 'Pharmaceutical Journal' for September, I found a very interesting, highly logical, and sensible letter from a gentleman styling himself "Provincial" upon Chlorodyne *versus* Liq. Chloroformi Co.

This letter appears to have been written partly in answer or relating to some previous correspondence upon the subject, of which I am totally ignorant. But it has been so adroitly handled by your correspondent, and throws out such suggestions relating to the intrinsic composition and therapeutic action of this compound, that I feel bound to lay before him and the readers of your Journal my views upon the nature of this remedial agent, backed up by a case of poisoning with Dr. Collis Browne's Chlorodyne, which came under my care whilst Resident Medical Officer at Charing Cross Hospital. I shall not attempt to discuss Dr. Browne's merit to originality, his prior claim to precedence of manufacture, or his right as a member or licentiate of any corporate medical or surgical body, to lend his name to a secret medicine, neither shall I lay stress upon the manufacturer and prime vendor of this compound being a member of the Council of the Pharmaceutical Society, an Examiner and an Ex-President. No. Such is not the object of my letter. On the contrary, I wish to bear out by actual physiological experience what your correspondent so tersely, and to my mind so rationally conjectures, when he says, "Since even admitting that contraction did not follow, it is still quite possible that his chlorodyne may contain an ingredient which tends to expand the pupil, and thus the two antagonistic forces, contractile and expansive, would balance each other." Now in this I quite agree with him, that there is an ingredient, and I firmly believe this to be nothing more nor less than belladonna, or its active principle atropine. It has often surprised me that in the various analyses, this drug has not been found to enter into the composition of chlorodyne; nevertheless, I am fully persuaded from its physiological action, such is the case, and that the chemist, after this suggestion, will not, if he tries, fail to discover it. I am constantly in the habit of administering belladonna in gradually increasing doses, for certain classes of disease, depending upon impaired or excessive nerve-function, either alone or in combination with opium, sometimes by the mouth, at others by the rectum, and also by hypodermic injection. It has frequently occurred to me, that the action of this combination as an anodyne was very analogous to chlorodyne, and after its exhibition, the pupil was invariably found more or less dilated. From this it will be seen that I do not agree with your correspondent when he says that the efficacy of Dr. Collis Browne's chlorodyne is due almost entirely to morphia modified by chloroform. On the contrary, I am quite certain this is not the case. But that opium, or its alkaloid, morphia, plays an active part, I have not the least doubt, its action being modified, not so much by Indian hemp (the presence of which I am inclined to doubt) as by the belladonna which it contains. Now, by way of argument, I will take the standard composition of chlorodyne to be as follows, leaving proportions out of the question altogether:—

Opium, or its alkaloid, Morphine.
Belladonna, or its alkaloid, Atropine.
Indian Hemp (doubtful).
Chloroform.
Hydrocyanic Acid.
Capsicine.
Oil of Peppermint.
Water and Treacle.

Now this is a goodly array of active ingredients; and that Dr. Browne's chlorodyne contains all these has been (I believe my statement to be correct) proved by chemical analysis, and I very much question if it contains anything more. Admitting this to be its composition, the object of my communication is to prove it by the effect produced, not only in small, but in poisonous doses; and by way of preliminary, I will briefly place in review the actions of morphine, belladonna, and Indian hemp.

Morphia is a sedative and narcotic, acts directly through the nervous system, produces congestion of the brain, (I do not believe opium produces congestion in the first or exciting stage; on the contrary, I believe it to produce an anæmic condition, by its action upon the sympathetic nerve-filaments accompanying each minute capillary vessel to its finest and ultimate ramifications, inducing contraction of their walls: this condition is, however, very transitory, and, as in inflammation, is rapidly succeeded by dilatation and stains of blood corpuscles, or what is better known as congestion,) and in rare cases delirium and convulsions. It contracts the pupil, and, in fatal cases, its action terminates in profound coma. It appears to act upon, more especially, that part of the nervous centre known as the cerebrum, and hence, taking it for granted that the cerebrum is the seat of the mind, in other words the source of thought, memory, perception, and sensation, we expect to find these faculties in abeyance whilst this portion of the nervous system is under the influence of this drug. The cerebrum, however, consisting of two hemispheres, which may be looked upon as two minds, but which in perfect health work in absolute and harmonious unity, differs from this in certain diseased states; and when one hemisphere is disordered, say simply congested, the impressions received under such circumstances do not engender unity of ideas; on the contrary, two sensations are produced, different ideas are at the same moment called forth, and two trains of thoughts may be carried on by the one mind, acting and being acted upon differently in the two hemispheres. Under these circumstances, some of the incoherences of dreaming and delirium are explicable.

Belladonna.—The action of this drug is decidedly antagonistic and dissimilar to that of opium. It never produces congestion of the brain; on the contrary, it produces anæmia. It acts directly upon the nervous, but more especially upon the organic or sympathetic, system of nerves; and whatever effects it produces upon the cerebro-spinal system, these are, for the most part, primarily of a reflex nature. I am greatly inclined to believe that it does not act, like opium, upon the cerebral hemispheres, but that its action is directed more to the cerebellum and medulla oblongata. I have frequently noticed persons, whilst under the influence of large doses of this drug, to want that voluntary power of self-movement and co-ordination; there has been a want of harmony in their movements, a feeling somewhat akin to drunkenness and inability to preserve their equilibrium. *It dilates the pupil of the eye.* This is in direct contradistinction to opium, which invariably contracts it. It produces dimness of, and in some cases double, vision, dryness of the tongue, fauces, and throat; in poisonous doses, intense thirst, but inability to swallow drink, great pain over the region of the stomach and præcordia, intense pain at the back of the head, overflow of tears, a feeling of suffocation and inability to inspire freely, from partial paralysis of the diaphragm. The fatal termination to poisonous doses of this drug is due to coma, not direct, but indirect through apulla.

Indian Hemp.—This drug is anodyne, and appears to possess an essential property in controlling inordinate muscular spasm. Linnæus speaks of its properties as *Vis narcotica, phantastica, dementens,* etc.; it undoubtedly produces pleasurable ideas, and in some instances allays and tranquillizes irritability of the nervous system, where opium and other sedatives fail to produce any effect. As I said before, I doubt the existence of this drug in Dr. Browne's chlorodyne. If it does contain any narcotic of this class, it is tobacco.

Having thus reviewed what I consider to be the physiological action of the two most essential drugs in the composition of chlorodyne, I will now lay before your readers the following case which I treated, where the patient who had been in the habit of taking chlorodyne (like many others, to the utter and ruinous impairment of their nervous systems, the prostration of all vital energy, tending finally to the destruction of every intellectual and mental faculty), took an overdose. From his own statement, it must have been nearly one-third of an ounce, which would undoubtedly have proved fatal, had not the proper remedial agents been promptly and energetically administered.

J. C. was admitted into Charing Cross Hospital, accompanied by two policemen, who said, they found him lying upon the pavement in a state of great distress, and by him, or in his hand, was found an empty one-ounce vial blue bottle, labelled "Dr. Collis Browne's Chlorodyne," and part of the usual protection-stamp was also attached to the bottle, which smelt strongly of this mixture, so also did the poor fellow's breath. The following signs and symptoms will give an idea of his condition :—*Countenance* of a livid hue. *Eyes*, suffused with tears, for the most part fixed, having a vacant, disconcerted stare. *Conjunctivæ* congested, almost red. *Pupils* alternately dilated and contracted, more so the former than the latter. *Tongue* brown and dry as pasteboard. *Breathing* at intervals quick and hurried, almost amounting to panting, succeeded by a long pause, wound up by a deep and convulsive sigh. *Pulse* at times scarcely appreciable, 160 per minute, small and weak. *Heart's* action regular, but extremely hurried and feeble. *Temperature* in axilla 97° F. There was no involuntary discharge of urine or fæces. He was lethargic, but not comatose when first admitted. He was constantly muttering to some person who he thought was near him, and every now and again, a convulsive movement appeared to pass through and shake him from head to heel. At times he would start suddenly as if impelled by some sudden power over which he evidently had no control. At one time, whilst seated, he suddenly, as quick as lightning, made a semi-somersault, pitching head foremost into a bucket which was placed close by. I rushed towards him fully expecting to find that he was dead, fortunately he still breathed, and in a few seconds appeared as before. There was no co-ordination of movement; he could not walk alone, though strong upon his legs; he staggered, always with the tendency to fall forward upon his face; immediately preceding the electric-like plunge into the bucket, he put his hand to the back of his head, and complained of excruciating pain there; shortly after this, his pupils became permanently contracted for nearly half an hour, and it was with the greatest difficulty that he was kept from falling into a comatose state. He was admitted at 2 A.M., and kept under treatment until 10 A.M., when I thought him sufficiently recovered to be left alone.

Treatment.—Shortly after admission his stomach was washed out with a warm solution of sulphate; after this it was injected with hydrate of magnesia suspended in milk, to which was added a little brandy. It was impossible to get him to swallow. He was continually being flagellated and trotted about the whole length of the hospital by two policemen, who shook him alternately, and their most strenuous exertions were at times inefficient to keep him awake. Hot coffee was given to him frequently, and by 10 A.M. our exertions were rewarded by finding him reasonable and collected.

Such is the history of a genuine and authenticated case of poisoning by chlorodyne (Dr. Collis Browne's). It is of interest to the therapeutist, physiologist, and toxicologist. If the reader will compare this man's symptoms with my remarks upon the action of belladonna, I am inclined to believe he will come to the same conclusion as myself, that this drug plays an important part in this compound.

Medical Club, Oct. 15, 1869.

ON EXCIPIENTS FOR PILLS.

BY T. H. HUSTWICK.

After reading Mr. Savage's paper on this subject, I must say I was rather astonished at his novel suggestion for making creasote pills, and it occurred to me, that a patient taking these wax pills might find it necessary to take a dose of turpentine as well, to ensure their solution in the stomach,—neither a very pleasant nor practicable idea. It has fallen to my lot to have had considerable experience in the making of creasote pills, and I have no hesitation in saying, that Mr. Savage's plan is not the best; which assertion, I think, will be fully borne out by my statements.

I have carefully prepared the formulæ marked A. C. E. F. M. Nos. 4 and 5, they being the principal ones and dissimilar. I will now start with the fact before me that crumb of bread is the best excipient for these pills, excepting in such cases as the formula F, they requiring a different treatment. Liquorice powder is about the last thing I should have thought of using as an absorbent of creasote or moisture generally, there being several others very superior, —about the best of all being lycopodium.

A. Creasoti gtt. i.
Pil. Sapon. Co. gr. iiss.
Micæ Panis gr. iss.
Lycopod. gr. i.
Ft. Pil. i. ♏vj.

Instead of being 6 to 7 grains, and no doubt difficult to roll, I have here six very nice pills of the ordinary 5-grain size, rolled out beautifully, and retaining every particle of creasote.

C. Creasoti gtt. iij.
Micæ Panis gr. iij.
Lycopod. gr. i.
Pastæ Tragac. q. s.
Ft. Pil. i. ♏vj.

Made up very nicely: 3 grains of bread quite sufficient, and tragacanth paste enough to make the oil and bread thoroughly homogeneous; this being too soft to roll, lycopodium was added, they then rolled out tolerably well, and are very little larger than the ordinary 5-grain size, with all the creasote retained.

E. Creasoti gtt. ij.
Saponis gr. i.
Micæ Panis gr. iij.
P. Tragac. Co. gr. iss.
Ft. Pil. i. ♏vj.

Being much too soft after mixing the three first, pulv. tragac. co. was added with the best effect; they rolled out well, are a very clean pill, but larger than any of the others, being the size of a large 5-grain pill. Creasote completely retained.

F. Creasoti gtt. iij.
Pil. Sapon. Co. gr. v.
Lycopod. gr. i.
Pulv. Tragac. Co. gr. i.
Ft. Pil. ij. ♏xij.

The two first making a semi-fluid mass, and lycopodium being not absorbent enough, I added pulv. tragac. co. again with good effect, as it made a good mass, rolled out well, and the two pills are of the usual 4½-grain size, against those of Mr. S. 7½ grains each. Creasote completely retained.

M. Ferri Sulph. gr. i.
Pil. Galb. Co. gr. iiss.
Ol. Menthæ gtt. i.
Lycopod. gr. i.
Ft. Pil. i. ♏vj.

The first three made a mass too soft to roll; the lycopodium being added, it was then in a fit state to roll; makes ordinary-sized pills.

No. 4. Ol. Croton. gtt. i.
Pil. Sapon. Co. gr. ij.
Micæ Panis gr. i.
Ft. Pil. i. ♏vj.

Made up very easily into small-sized pills.

No. 5. Ol. Croton. gtt. i.
Pulv. Opii gr. ¼.
Micæ Panis gr. iss.
Pastæ Tragac. q. s.
Ft. Pil. i. ♏ vj.

Made rather soft pills, but as they have kept their shape there is no reason to alter the formula.

"If it is necessary to give creasote in pills at all," why use liquorice powder, which is objectionable on account of its bulk, and wax, which is equally so because of its insolubility, when such simple aids as bread, tragacanth paste, and lycopodium, are to be found in every druggist's shop? The rationale of the process is as follows:—The bread gives stamina and bulk to the pills, while the paste gives adhesiveness, but as this is sometimes gained at the expense of consistency, it is then necessary to add an absorbent, as lycopodium, and this is a better absorbent than tragacanth powder, by reason of its not causing the pill to get so very hard as the latter does. In my opinion, the compound tragacanth powder is to be preferred before the simple.

A word now as to tragacanth paste, which is the ordinary gum paste used for sticking on labels in druggists' shops. As an excipient for pills it is really A 1, the most refractory masses, whether resinous, oleaginous, or otherwise, being rendered quite docile,—that is, of course, if not too soft in the first instance. Dr. Redwood, in his 'Practical Pharmacy,' says, "the effect in some cases of a judiciously selected excipient is quite surprising." So it appears from some of the examples I have given.

While on this subject there is one form of pill which frequently proves a puzzler. It is useless trying to make 5 grains of powdered camphor into a pill by means of conf. roses, treacle, gum paste, etc., so as to be of a swallowable size; but a dozen of such may be made quickly and admirably by the aid of three or four drops of castor oil, and a drop of sp. v. r. if disposed to crumble. It is but a step from pills to pill pounce, and in the work of Dr. Redwood before-quoted, it is stated that lycopodium is but little used in this country; it ought to be better known, as it deserves all the praise there awarded to it, and even more; and, in my opinion, a box of pills nicely finished and rolled in lycopodium, looks much handsomer than when silvered,—the pills look like what they are, and not like silver bullets.

I may add, that creasote pills made as here directed take the silver leaf, and that I have frequently silvered them. I would also mention, that in the formulæ here given, I have used drops instead of minims, believing that in such very small quantities the drop represents the minim near enough for all practical purposes, especially when we consider the amount that is unavoidably lost by adhering to the side of the measure.

9, *West Derby Street, Liverpool.*

LIQUOR HYDRIODATIS ARSENICI ET HYDRARGYRI.

BY WILLIAM HUSKISSON, JUN., F.C.S.

Your Journal of the present month contains an interesting memoir by W. E. Heathfield upon the preparation of Donovan's solution, with reference to its relative strength and colour, as prepared by the various processes adopted since its first introduction to pharmacy. It is unquestionably of great importance that the solution bearing Mr. Donovan's name should be prepared strictly in accordance with the results of his formula, so as to contain the exact amount of ingredients therein specified.

It is, however, admitted that the process is unnecessarily tedious, and the result has not always been successful, even when it has been manipulated by chemists of considerable reputation. In some cases failure has been attributed to the want of attention to details, and more particularly to the long-continued incessant trituration until perfect union is effected of the double metallic iodides. Any abridgment of the time during which the trituration should be continued tends to leave the arsenic undissolved.

Mr. Draper "states that unless the greatest care be taken to ensure the effectual combination of the iodine on heating the mixture, instead of its becoming, as intended, nearly colourless, a great part of the arsenic remains undissolved; and any continuance of ebullition only vaporizes the free iodine, as may be seen from the application of starch-paper. Thus, not only is its preparation troublesome, but the strength of the product itself is liable to variation."

M. Soubeiran, in attempting to carry out Mr. Donovan's process, found that the whole of the arsenic did not dissolve, and he was of the opinion that the ratio of iodine was insufficient; but Mr. Donovan attributed the failure to his not using the quantity of alcohol specified by him, thus leaving the mass dry before the elements were united.

I am far from wishing, in any way, to disparage the efforts of the author in his desire to explain some of the causes of the failure, and obtain a perfect preparation; still, it is difficult to reconcile the diversity of opinion that exists amongst chemists.

First, as regards the exact colour the solution should have;

Secondly, as to whether Mr. Donovan's process is really the best for effecting the desired result with certainty and success; and

Thirdly, as to the relative strength of the solutions prepared by Mr. Donovan's and M. Soubeiran's process.

Mr. Heathfield states, "When Mr. Donovan first made the solution, he found that it generally proved to be of a very pale yellow, and then only when seen in large quantities, sometimes being as pale as water." In referring to Mr. Donovan's original memoir, I find he states, "It is scarcely worth while to observe on the colour of the liquor of hydriodate of arsenic and mercury. I have described it as yellow; Dr. Kane says it is colourless, and that it soon becomes yellow by the decomposition of hydriodic acid. During an extensive manufacture of it, I have never procured it colourless, except when the process failed. With me, it has always been of a light yellow hue from the first; and, so far from its becoming yellow, when its colour was purposely deepened by dissolving in it an excess of iodine, a short exposure to light was sufficient to restore its original pale yellow tint. The liquid is also yellow when made by Soubeiran's process.* Dr. Pereira states that the solution is of a pale yellow colour with a green tinge."

With regard to the difference in the strength of Donovan's and Soubeiran's solutions, Mr. Donovan states thus:—"The quantities of the respective ingredients employed by me were—

	Grains.			Grains.	
Arsenic .	6·08	+	Iodine	30·24	Plisson.
Mercury .	15·38	+	Iodine	19·38	Gay-Lussac.
Total Iodine				49·62	

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* I should infer that on the addition of a few grains of iodine to the solution when exposed to light, the water becomes decomposed, its hydrogen uniting with the iodine, forming hydriodic acid. I believe it is a well-known fact that a solution of chlorine exposed to light becomes converted into hydrochloric acid.

I employ 50 grains, for the sake of round numbers. M. Soubeiran, in preference to my method, recommends iodide of arsenic and biniodide of mercury to be dissolved in boiling water. He finds them dissolve perfectly. Yet between his method and mine there is no difference in the ratio of materials used; for, calculating from the data contained in his memoir, the quantity of iodine necessary for the above quantities of arsenic and mercury would be as follows:—

	Grains.			Grains.
Arsenic .	6·08	+	Iodine	31·70
Mercury .	15·38	+	Iodine	19·12
		Total Iodine	. . . .	50·82

Which is, within a grain and one-fifth, the same as I employ; and the only difference is, that he uses the two iodides ready formed, while I form the same extemporaneously. If his method succeeds, so must mine."

Of the five processes referred to by Mr. Heathfield, there is one well deserving of especial attention, viz. that of M. Soubeiran, in which he proposes to unite the biniodide of mercury with the teriodide of arsenic,—two definite chemical combinations,—and thus form the solution.

Mr. Heathfield, in commenting upon M. Soubeiran's process, states that it is open to this objection, that the biniodide of mercury and the teriodide of arsenic vary in the proportion of moisture they contain. This difficulty, however, can be easily overcome; if the biniodide of mercury has been prepared by precipitation, and has been imperfectly dried, the moisture can readily be removed by sublimation; but in the case of the sublimation of iodide of arsenic, much care is required to prevent the formation of arsenious acid in the sublimate. But if dry sublimed iodine be fused with finely-divided metallic arsenic, and the mass afterwards be finely levigated and then re-fused, any doubt as to the presence of moisture would be at once removed. .Having prepared large quantities of the solution by both processes, and after carefully reviewing the two methods, and forming a comparison between them both, I should decidedly give the preference to M. Soubeiran's, on the grounds of its easy manipulation and absolute certainty of success, the two metallic iodides being perfectly soluble in boiling water, and the two sometimes differing from each other by one grain and one-fifth of iodine in eight ounces of the solution, the proportion of arsenic and mercury remaining exactly the same. I would, therefore, *venture* to recommend for practical adoption the following proportions:—

Sublimed Biniodide of Mercury .	172⅓ grains.
Teriodide of Arsenic	188⅓ ,,
Distilled Water	40 ounces.

The solution should measure exactly forty ounces, and should not give a blue colour when starch-paper is immersed in it.

Mr. Donovan expressly states that the solution prepared by his method should be of a pale yellow colour. Mr. Heathfield, following Dr. Kane, states that it should be colourless. Now I think this discrepancy may be easily explained, for I find if the yellow solution, prepared either by Mr. Donovan's or M. Soubeiran's process, be agitated, without the assistance of heat, with a few grains of finely-levigated metallic arsenic, they become at once permanently as pale and colourless as water; hence it is quite possible that both these chemists may have had a slight excess of arsenic present. That the yellow colour is not due to the presence of free iodine may be readily proved by its not giving a blue colour with starch paper.

SOLUTION OF PROTOXIDE OF NITROGEN.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—Attention having been drawn by Mr. C. H. Wood and other writers to a paper on solution of protoxide of nitrogen by M. Stanislas Limousin, in the 'Journal de Pharmacie et de Chimie,' it may not be uninteresting to your readers to know that such a solution has been prepared for medicinal use on rather a large scale in this country; during the last two or three years the firm with which I am connected has made and sold upwards of 15,000 half-pint bottles; it has been prescribed with apparently good results by some local physicians, and is preferred to other effervescing waters by many persons who now drink it regularly.

A similar solution is also described by Pereira ('Materia Medica,' vol. i. 4th edition, p. 421) as "aqua azotica oxygenata," or "Searles' patent aerated oxygenous water," containing five times its bulk of the gas.

I am, Sir, yours truly,
F. Baden Benger.

1, *Market Place, Manchester.*

SULPHATE OF BEBERINE.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Dear Sir,—A foot-note at page 193 of your October number runs thus:—"But the so-called *sulphate of bibirine* of Macfarlan of Edinburgh, of which Mr. Hanbury provided me a sample, proved in fact to yield only *a very trifling amount* of pure bibirine, the sulphate containing so large a proportion of dark brown-coloured matter that it caused the purification of bibirine to be extremely difficult, at least by the method above mentioned, which, however, I believe to be the best." We have one short reply to give Dr. Flückiger. If we prepare our sulphate of bebeerine with the materials, and by the method, ordered in the British Pharmacopœia, we are not responsible for what it does or does not contain.

Dr. F. forgets the "sulphate of beberia" is a *pharmaceutical preparation* of a somewhat variable and unknown constitution, save that it contains an alkaloid named beberia. He forgets that, and then compares and contrasts it with a *chemical* compound of definite composition, namely pure beberine. 20 ounces of the Decoctum Cinchonæ Flavæ of the B.P. may contain 14 or 15 grains of quinine, or about 1 grain in 580 fluid grains of the decoction; it does not need italics to tell us that it yields quinine to a very trifling amount; and it is not, for the purpose of blaming individuals who prepare it, a fair thing to contrast it with pure quinine. Its proper standard is itself, *i. e.* an honestly-prepared decoction.

If by the word "impurity," when applied to pharmaceutical preparations, we are to understand all other substances except one prime ingredient in a preparation, we object to the term out-and-out; for, from the materials given and the method ordered, those other substances ought to be in it,—they constitute a part and parcel of it. In *chemical* ethics, "the law" is, *take them all out;* but in *pharmaceutical* ethics it is, *keep them all in*, for, in many cases, they are valuable, and you have no authority to remove them whether they are or are not.

The "sulphate of beberia" needs investigation. Unfortunately, we think, the name was first applied to a fluid extract of bebeeru bark, got by excess of dilute sulphuric acid; and it has retained it all through, although very well known to be the name of a substance containing much more than pure beberia. We hope, in your December number, to have more to say about the sulphate of beberia.

We are, dear Sir, your obedient servants,
J. F. MACFARLAN AND Co.

Edinburgh, Oct. 14th, 1869.

THE LAW AFFECTING PHARMACY IN IRELAND.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—I have just observed with great satisfaction Mr. Abraham's notice relative to pharmacy in Ireland, reported in the August number of the 'Pharmaceutical Journal,' having long considered that the transfer to the Pharmaceutical Society of Great Britain of the misapplied powers entrusted to the Dublin Apothecaries' Hall in 1791 could be but a question of time; and I am strongly of opinion that no time could be more opportune than the present.

Compulsory pharmaceutical education is now the law of England, as it has been that of Ireland for upwards of seventy years, however much of late overlaid by oppressive conditions, neither required for the efficient discharge of the proper duties of the apothecary, nor authorized by the Irish Apothecaries Act of incorporation; and I can see no valid reason why the holder by *examination* of the Pharmaceutical Society's Major diploma should not be at liberty to practise pharmacy in Ireland, as well as in any other section of her Majesty's dominions.

I must, however, strongly deprecate the extension to this country of the Modified Examination devised to protect in England the interests of an uneducated class of dispensing chemists, such as has no existence here. With this single reservation, I trust the proposed movement will receive the cordial co-operation of every person in Ireland at all desirous of the advancement of pharmacy.

A short Bill extending to Ireland the authority of the Pharmaceutical Society, and authorizing the *immediate* introduction of its full curriculum, would not interfere with any existing rights; no individual at the present moment being legally entitled to keep open shop for dispensing medicine in Ireland without a licence from the Dublin Apothecaries' Hall—only to be obtained by an examination which, I must do the Hall the justice to say, has always been of a very efficient character, though of late years, constituting but a portion of the examination for its medical certificate.

With regard to the Dublin Apothecaries' Hall, I conceive there can arise no difficulty whatever. Having long since looked down contemptuously upon its original constitution, and having succeeded in transforming itself into a school of medicine, it should rejoice exceedingly at being relieved from the burden of an irksome duty, derogatory to its present dignified position and exalted functions, the distasteful duty of educating the mere apothecary—a requirement no longer to be postponed.

Wishing Mr. Abraham's proposed movement therefore the success to which sound policy and simple justice fully entitle it,

I remain, your obedient Servant,
JOHN GRATTAN,
Licentiate of the Dublin Apothecaries' Hall.

Belfast, Oct. 20, 1869.

NOTES AND ABSTRACTS IN CHEMISTRY AND PHARMACY.

BY C. H. WOOD, F.C.S.

Some New Sulphur Salts.

M. R. Schneider has described a sulphur compound which he regards as containing sesquisulphide of iron functioning as an acid. When 1 part of pulverized iron, 6 parts of dry carbonate of potash, and 6 parts of sulphur are heated in a spacious crucible, a fused mass is obtained which yields to water some sulphide and hyposulphite of potassium, while there remains a large quantity of brilliant, slender, flexible needles of a purple colour. These crystals are finer when the potash is mixed with one-sixth of its weight of soda. This product has the composition $Fe_2K_2S_4$. Heated in the air it burns, producing sulphurous acid, oxide of iron, and sulphate of potash. Out of contact with air it is unaffected by heat, beyond a momentary darkening of colour. It is rapidly attacked by acid, even when very diluted, sulphuretted hydrogen being disengaged and sulphur deposited. Heated in a current of hydrogen, it loses one atom of sulphur, preserving its form but becoming black, and afterwards dissolving in acids without a deposit of sulphur.

If the potassic carbonate be replaced by sodic carbonate, a similar substance is obtained, but containing oxygen.

A *sulpho-bismuthite of potassium* may also be obtained by fusing 6 parts of carbonate of potash, 6 of sulphur, and 1 of bismuth; the fused product, washed with water, leaves needles of a steel-grey colour and metallic lustre, having the composition $K_2Bi_2S_4$. This body is entirely decomposed by hydrochloric acid, with disengagement of sulphuretted hydrogen.

The Essential Oil of Cochlearia Officinalis.

M. W. Hofmann has shown* that the essential oil of Cochlearia differs from the oil of mustard with which it is sometimes confounded. It boils at 159°–160° C., whilst the oil of mustard boils at 147° C. With ammonia it furnishes a beautiful crystallized substance fusible at 135° C., the thiosinnamine of horseradish.

The analysis of the oil, and of its ammonia derivative, leads to the formula C_5H_9NS. It belongs, therefore, to the butylic series:—

$$\left.\begin{matrix}C_4H_9\\CS\end{matrix}\right\}N$$

Oil of mustard being C_4H_5NS, or the sulphocyanide of allyl:

$$\left.\begin{matrix}C_3H_5\\CS\end{matrix}\right\}N$$

Butylamine, treated with sulphide of carbon and oxide of mercury, furnishes an essence of the same composition as the oil of cochlearia, but possessing a different odour, and constituting, therefore, an isomeric substance.

Watercress also contains an essence analogous to the essence of mustard, the nature of which the author has not yet determined.

Manufacture of Nitro-glycerine.

In the manufactory of M. Mowbray about 150 litres (33 gallons) of nitroglycerine are produced daily. The apparatus employed is a large horse-shoe reservoir of about three feet in height and fifty feet in length, which is filled with a refrigerating mixture of ice and common salt. In this tank are placed, at a distance of two feet from each other, stoneware vessels of 4 to 5 litres capacity, the necks projecting about 2 or 3 inches only above the freezing mixture. The mixture of nitric and sulphuric acids is poured into the vessels, and the glycerine made to enter, drop by drop, from a reservoir placed two feet above the earthenware jars. To agitate the mixture M. Mowbray employs cold air. For this purpose a glass tube is plunged into each vessel, and by a caoutchouc tube and tap, is placed in communication with cold, compressed air. When the reaction occurs, the temperature rises, and red vapours are evolved; the workman moves the glass tube through the mass of the liquid, which, being traversed by the current of air, is promptly cooled, at the same time that the nitrous vapours are carried off.

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* 'Deutsche Chemische Gesellschaft' and 'Bulletin de la Société Chimique,' Oct. 1869.

Forty-two kilogrammes of glycerine yield ninety-four kilogrammes of nitro-glycerine. The product is perfectly limpid and colourless at 9° C.; below this temperature it is congealed, and then resembles bruised ice, in which state it is not explosive, and can be transported without danger. The author states that nitro-glycerine, purer than that hitherto manufactured, occasions no headache to the mining workmen. M. Mowbray's nitro-glycerine dilates by congelation, while the ordinary nitro-glycerine contracts under the same conditions; this is explained by the presence of vapours of hyponitrous acid in the latter, which are absent in the former.

A New Test for Nitric Acid.

Sulphate of aniline is stated to be a surprisingly delicate test for nitric acid.

About a cubic centimetre of pure concentrated sulphuric acid (sp. gr. 1·84) is placed in a watch-glass; half a cub. centimetre of a solution of sulphate of aniline (formed by adding ten drops of commercial aniline to 50 c. c. of diluted sulphuric acid in the proportion of 1 to 6) is poured on, drop by drop; a glass tube is moistened with the liquid to be tested and moved circularly in the watch-glass. By blowing on the mixture during the gentle agitation, when a trace of nitric acid is present, circular striæ are developed of a very intense red colour, tinting the liquid rose. With more than a trace of nitric acid the colour becomes carmine, passing to a brownish-red. This process serves to detect the presence of nitric or nitrous acid in the sulphuric acid of commerce. It will also reveal the presence of nitrates in water.

On the Oxidation of Cinchonine and the Probable Existence of a New Alkaloid in the Cinchonas.

An important paper on this subject was recently presented to the Chemical Society of Paris by Messrs. Caventon and Willm.

When a cold saturated solution of permanganate of potash is added drop by drop to a cold acidulated solution of sulphate of cinchonine, the decoloration is instantaneous, and hydrated peroxide of manganese is deposited. This addition is continued until the colour of the permanganate remains permanent for several minutes. To attain this point, about equal parts of sulphate of cinchonine and permanganate should be employed. Whatever care be taken to cool the mixture, a disengagement of carbonic acid always occurs towards the middle of the reaction; but the authors have never observed any formation of ammonia or of nitric acid. The change produced is very complex; the principal products being the following:—1. An indifferent body named *cinchotenine*, uniting either with bases or with acids, but giving well-defined compounds. 2. A well-crystallized acid, named *carboxycinchonic acid.* 3. A substance reducing the cupro-potassic tartrate. Independently of these products of oxidation, a peculiar base is also obtained, differing from cinchonine by two additional atoms of hydrogen, which the authors therefore name *hydrocinchonine.*

To separate this base and the products resulting from the action of the permanganate upon the cinchonine, the following method may be employed. The amber-yellow solution, separated by filtration from the precipitate of manganic hydrate is evaporated to dryness by a water bath, and the residue exhausted by rectified spirit which dissolves only the organic substances. The alcoholic solution is evaporated to dryness, and the brown mass which remains is treated with boiling water, which leaves a resin containing a proportion more or less large of free hydrocinchonine. The aqueous solution deposits on cooling an abundant crystallization of cinchotenine, which is purified by animal charcoal, etc. The mother liquor from this first crystallization containing more cinchotenine and the carboxycinchonic acid is precipitated with sulphate of copper, which gives, with the cinchotenine, a pale green precipitate. This is rapidly separated by filtration and the filtrate boiled, which determines the formation of a fine blue precipitate—impure carboxycinchonate of copper. Lastly the substance reducing the cupro-potassic tartrate is concentrated in the last mother liquor; but its separation cannot be effected with certainty.

These separations can also be effected by fractional precipitations with chloride of platinum.

Hydrocinchonine.—By a series of analyses of the free base and of its chloroplatinate, the authors have established the formula of hydrocinchonine. This substance differs from cinchonine by containing two more atoms of hydrogen, and hence the name assigned to it.

Hydrocinchonine	$C_{20}H_{26}N_2O$
Cinchonine	$C_{20}H_{24}N_2O$

Hydrocinchonine is distinguished from cinchonine by the slowness with which it is acted on by permanganate in the cold. The authors are induced by this circumstance and by the chemical composition of the body to consider that hydrocinchonine exists ready formed in the cinchonine of commerce, and that it is not a product of the oxidation.

They have long suspected that cinchonine may be a mixture, and M. Hlasiwetz has already expressed the same idea, being led to it by the discrepancies manifested in analyses of cinchonine by different chemists. The properties of cinchonine and hydrocinchonine are so similar that the two bodies cannot be separated by the ordinary methods; it is necessary to destroy the cinchonine in order to isolate the new base. Nevertheless, it is remarkable that the more hydrogenated body should present the greater resistance to an oxidizing agent.

Hydrocinchonine fuses at 268° C., while cinchonine, under the same conditions, melts at 257°. It deviates the plane of polarization less than cinchonine. It is insoluble in cold water, but slightly soluble in boiling water, and crystallizing out as the solution cools. It exerts an alkaline reaction. A litre of strong alcohol dissolves 7·35 grammes at 15° C., but by heat a much larger quantity is taken up and deposited again on cooling in small, brilliant needles. It forms well-crystallized salts, soluble in water, and of a bitter taste. The neutral hydrochlorate crystallizes in long, colourless needles; the nitrate in small, brilliant plates. Its chloroplatinate is easily soluble in hydrochloric acid, and forms large brilliant crystals, containing $C_{20}H_{26}N_2OPtCl_6H_2$. It contains also one molecule of water, which it only loses at 140°. The sulphate of hydrocinchonine crystallizes in long, white needles, very soluble, differing in form from sulphate of cinchonine, and containing $(C_{20}H_{26}N_2O)_2SO_4H_2+3H_2O$. The neutral oxalate crystallizes in fine silky tufts, very soluble by heat, and containing $(C_{20}H_{26}N_2O)_2C_2O_4H_2$.

Cinchotenine.—This is the most abundant product of oxidation. It contains $C_{18}H_{20}N_2O_3$, and is deposited from its boiling aqueous solution in silky crystals of a silvery whiteness. It is little soluble in cold water, and sparingly dissolved by alcohol even boiling. Cinchoténine is neutral to vegetable colours, and is dissolved equally well by acids and by alkalies. Nevertheless it is insoluble in concentrated potash. It is completely separated from its barytic solution by a current of carbonic acid. It is difficultly attacked by permanganate, even in the warm. It deviates the plane of polarization to the right like cinchonine, but to a less extent. It forms a chloroplatinate, crystallizing in long needles soluble in hydrochloric acid. It reduces nitrate of silver in the warm, and in the cold gives a white precipitate.

Carboxycinchonic Acid.—This compound, which contains $C_{21}H_{14}N_2O_4$, results not only from oxidation, but also from a fixation of carbon; its formation appears to take place when the disengagement of carbonic acid is energetic; the quantity obtained is small. The acid is very soluble in water, and it crystallizes in hard anhydrous prisms, at first transparent, but becoming opaque. Strong alcohol dissolves about 1·8 per cent. in the cold, and 3 per cent. when boiling. Its action on polarized light is null. It is a bibasic acid, forming with the alkalies and baryta very soluble, badly-crystallized salts. The baryta salt contains $C_{21}H_{12}N_2O_4Ba$. The copper salt forms at first a pale green amorphous precipitate, but rapidly becomes crystalline and of a deep blue colour. The silver salt, $C_{21}H_{12}N_2O_4Ag_2$, forms a very stable crystalline precipitate.

This acid also dissolves in hydrochloric acid, and furnishes a crystalline chloroplatinate.

Soluble Albumen.

Large quantities of dried albumen, prepared from eggs and also from the serum of blood, are employed in the arts to fix the colours upon dyed fabrics. It is well known that considerable variation occurs in the coagulable power of different commercial samples of such albumen. This is sometimes attributed to adulteration.

M. Monnier, pharmacien at Nyon, has published the results of a number of experiments upon this subject, from which it appears that the coagulable power of albumen is materially affected by the influence of sunlight during the process of drying. He found that white of egg evaporated in the sun in an open dish yielded a product which did not coagulate by heat; but if the evaporation was conducted rapidly in a stove by diffused light only, a coagulable product was obtained. He has also ascertained that the addition of a small quantity of acetic, formic, tartaric, or citric acid in very dilute solution to the incoagulable albumen produces no precipitate, but restores the property of coagulating by heat like fresh white of egg.

Preparation of Nitrogen.

An Italian chemist, M. Lévy, has indicated a new method of preparing nitrogen gas. The process he suggests is to heat bichromate of ammonia in a retort; it is decomposed into green sesquioxide of chromium, watery vapour, and nitrogen.

$$(NH_4)_2Cr_2O_7=Cr_2O_3+4H_2O+N_2.$$

New Reagent for Detecting Iron and Copper.

M. Félix Bellamy has indicated a new reagent for detecting minute traces of iron or copper in natural waters. He states that an alcoholic tincture of logwood constitutes a test for these metals of unrivalled sensibility. The hæmatoxylin combines with either iron or copper, immediately producing a pure blue colour resembling that of the iodide of starch. The tincture is best prepared by macerating 12 or 15 parts of fresh thin shavings of logwood in 100 parts of alcohol. The alcohol should be previously purified by digestion on quicklime, and distillation from a glass retort. On adding a score of drops of this tincture to 200 cubic centimetres of water free from iron and copper, the liquid becomes yellow if carbonic acid predominates, or rose-violet if the earthy or alkaline bicarbonates are present. If a clean iron wire be then introduced, the colour will be seen to change in the space of one or two minutes, blue striæ forming round the metal and passing to the bottom.

Absolutely the same change is effected by copper, and it is impossible to distinguish the colour caused by the one metal from that produced by the other. The author states that by this test an appreciable change of colour is produced in water, containing only one part of iron or copper in twenty millions, and that it will give indications when galls, sulphocyanide, and prussiate of potash fail. He has even found that water passing through an iron pump or a copper pipe will sometimes assume a blue tint with the tincture. In such a case he attributes the action on the metal to carbonic acid in the water, because he finds that, after boiling the water, the tincture ceases to react.

The blue colour which results from the union of the hæmatoxylin with one or the other metal, precipitates after several days in light voluminous flocks, in which it is easy to recognize either iron or copper. If an excess of the reagent has been employed the metals are completely precipitated, and the liquor remains violet or yellowish according to the nature of the water. An appreciable blue deposit is obtained when the water contains only a five-millionth of the metal.

Pyrophosphate of Iron and Soda.

The 'Journal d'Anvers' gives the following method for preparing this double salt:—

A solution of 6 parts of pyrophosphate of soda in 120 parts of water is mixed with another solution containing 13 parts of liquid perchloride of iron of 1·44 sp. gr. and 78 parts of water. The precipitate is washed, and then dissolved in a warm solution of 4 parts of anhydrous pyrophosphate of soda in 36 parts of water. The liquor is evaporated till a pellicle forms, and allowed to crystallize. The crystals are dried at the ordinary temperature. Or the concentrated solution may be precipitated by the addition of four times its volume of strong alcohol. A translucid white precipitate is obtained.

The ferric pyrophosphate of soda occurs in the form of yellowish transparent plates. Its composition is stated to be $(Na_4 P_2O_7)_3(Fe_2 2PO_4)_2 20H_2O$.

AMERICAN PHARMACEUTICAL ETHICS.

SWEET QUININE.

A preparation has been sold and advertised in the United States under the name of "*Sweet Quinine*," of which the following description is given by the advertiser:—

> "Dr. Bullock's preparation, entitled 'Sweet Quinine,' is made from the best Peruvian bark, and has as positive and reliable tonic and anti-periodic power as the common bitter quinine. Unlike the latter, however, it has no bitterness, but a sweet taste instead. This important advantage constitutes its superiority for use by all—adults or children—who object to the nauseous bitterness of common quinine.
>
> "Sweet quinine is not offered as a *substitute* for common, bitter quinine, but to *replace* its use, representing it thoroughly, may be trusted in the most important and obstinate cases.
>
> "Sweet quinine is to be used in all intermittent, or other diseases, requiring quinine or Peruvian bark.
>
> "Sold in bottles containing one ounce.
>
> "Prices will always be at least ten per cent. less than common quinine."

Referring to this preparation and advertisement, the 'American Journal of Pharmacy' for July last, contained an article entitled, "*Sweet Quinine: what is it?*" by the editor, in which he says:—

> "We have been repeatedly asked the nature of the substance thrown into commerce by Mr. Frederick Stearns, under the name of 'Sweet Quinine.' In the March number

of this journal (p. 187), we gave a statement based solely upon the manufacturer's circular (not then having examined the article), from which we naturally inferred it to be the alkaloid quinia, associated with liquorice sugar. The following are the paragraphs: 'Sweet quinine is as definite a chemical salt as the sulphate (or bitter) quinine, is made direct from the same source, Peruvian bark; has, like it, positive tonic and antiperiodic power,' etc.

"'In sweet quinine each atom of the alkaloid is enveloped in *glicion*, the sweet principle of liquorice, and it forms an aggregation of minute sugar-coated molecules of quinine.' Nothing is said about any other alkaloid than quinia, and it is clearly intended that the reader should infer from the words used that the manufacturer's skill has succeeded in combining free quinine with glycyrrhizin in lieu of sulphuric acid, so as to mask its bitterness.

"Having within a few days (June 28) had our suspicion excited, we determined to examine it, and have satisfied ourselves that this so-called sweet quinine is no quinine at all, but mainly the alkaloid *cinchonia* precipitated from the sulphate, dried and triturated with an impure glycyrrhizin prepared from liquorice root. Cinchonia is very insoluble, requiring nearly 4000 parts of cold water, hence the tastelessness of 'sweet quinine,' and its bitterness with acid or alcoholic fluids which salify and dissolve it. The substance associated with it is nearly all removed by hot water, to which it gives a straw-colour. It froths much by agitation, and has a power of suspending or emulsifying the finely powdered cinchonia. These statements are based on the following experiments:—Sweet quinine laid on reddened litmus paper, and touched with a drop of alcohol, restores its blue tint immediately. The same occurs more slowly with a drop of water. It is almost wholly soluble in boiling alcohol in excess, yielding a light straw-coloured alkaline solution. Treated with boiling water, and well washed on a filter, it yields about 25 per cent. of its weight to that fluid, which acquires a straw colour, froths much by agitation, is without bitterness, and not precipitated by subacetate of lead or alcohol. Weak iodine water gives a greenish colour which soon fades, indicative of a trace of starch. Evaporated, this liquid deepens in colour, and separates a dark film which remains insoluble. As the liquid concentrates, its sweetness increases, and its taste is that of liquorice root. The residue insoluble in water was dried and treated with boiling alcohol, in which it dissolves, except some flocculent impurities of a dark colour, probably derived from the liquorice root. The alcoholic solution precipitated crystals by cooling and by evaporation, on standing.

"These crystals were soluble in dilute sulphuric acid, forming a crystalline salt, which, when dissolved in an excess of chlorine water, gave, on the addition of ammonia, a white precipitate, like cinchonia produces, without the *slightest* trace of green to indicate quinia. When the salt was added to a solution of ferrocyanide of potassium (Dr. Bill's test for cinchonia), a yellow curdy precipitate fell, which by gently heating became crystalline on cooling. When the salt is dissolved in a little water in a test-tube, and ether added, followed by ammonia, and shaken, the liquids separate and leave a whitish insoluble layer at their juncture. When treated by Herapath's test, no indication of green Herapathite crystals was obtained, but the brown precipitate, followed, on standing, by the dense, almost black crystals usual with cinchonia. There can be no doubt, from these results, that 'sweet quinine' consists of about three parts of cinchonia, and one of impure glycyrrhizin. Quite possibly there may be some cinchonidin also present, in small quantity, but no examination has been made for it. To what extent the glycyrrhizin acts as an acid towards the cinchonia we do not know, but its well-known affinity for bases renders it quite possible that such a relation might exist, though we incline to believe the union to be mechanical by trituration, as stated by the circular. We confess to being surprised at this result, when viewed in connection with the circular of Mr. Stearns. The *morale* of the affair is doubtful,—cinchonia, however tasteless, is not quinine, nor does its commercial value approach that of quinine so nearly as it is made to do in the garb of 'sweet quinine.' When physicians want cinchonia they can get it by prescription, and it is not in accordance with our ideas of fair dealing to serve it up as a new substance."

This subject was taken cognizance of by the American Pharmaceutical Association, at a meeting recently held (in September last) at Chicago.

The maker and advertiser of the so-called "Sweet Quinine" being a member of the Association, the following resolution was proposed by Dr. Squibb, and seconded by Mr. Albert E. Ebert, with the result detailed in the appended account:—

"Whereas, it must be an object of this Association, in common with all others of a similar character, to oppose what is wrong within the sphere of its action and influence; and

"Whereas, the constitution of the Association asserts that its objects are to elevate the standing, increase the knowledge, oppose the adulteration, and suppress the empiricisms of pharmacy; and

"Whereas, a member of this association has put forth a nostrum called 'sweet quinine,' which contains no quinia, and is therefore a fraudulent imposture; therefore

"*Resolved*,—That Mr. Frederick Stearns has, in this so-called 'sweet quinine,' and in the advertisement concerning it, violated the sense of moral rectitude of this association and has violated its constitution and the general purposes of its organization.

"*Resolved*,—That for these offences Mr. Frederick Stearns be expelled from this association.

"Mr. Stearns, of Detroit, then came forward. He said that he felt it due, not only to himself, but to the association, to say a few words. He said it was true that he had put a speciality into the market. He felt justified in doing so from two motives.—1. A pecuniary gain to himself. 2. A belief in the efficacy of his medicine. He explained what he believed his preparation to be, and hoped the society would not proceed to extreme measures.

"Mr. A. B. Taylor, of New York, asked Mr. Stearns if he proposed to continue selling his preparation if the society passed the present matter over?

"Mr. Stearns said, what he had done, he had done. He wished to be judged by that. That was all that this association could reach. His future acts would speak for themselves.

"Mr. Ebert read a letter written by Mr. Stearns to a Cincinnati journal, which contained heretical doctrines.

"Mr. Wright, of New York, thought that Dr. Squibb's resolutions of expulsion were rather too severe, and offered the following as a substitute therefor:—

"*Resolved*,—That in the manufacture and manner of advertising the article known as 'sweet quinine,' Mr. Frederick Stearns, of Detroit, has committed a serious offence against the ethics of this association, and is deserving of its severe censure.

"Mr. Taylor, of Philadelphia, thought this a matter of principle. He was a member of the Committee on the Constitution. He stood there to urge the penalty of those laws. He was a personal friend of Mr. Stearns. To inflict any penalty upon him would be like plucking out his own right eye. He had great sympathy for Mr. Stearns; but the ethical code of the association must be upheld. If we are not strong enough to do it, we had better cease to exist as an association. There are thousands who lie sick and dying, and who demand pure drugs. Mr. Stearns, as he says, went into this matter knowingly. He was always a great stickler for ethics. 'I would have this association do by him as it would by me. It is a question of principle.'

"Mr. Procter observed that Mr. Stearns had had a chance to defend himself. He had shown a sincerity that relieved him from all moral obloquy. His was an error of policy rather than of principle. But still he could not fail to regard this thing as a stab at the virtues of this association. The association must protect itself.

"Mr. Wright, of New York, wanted to know, if this matter of expulsion was carried out, how long this association could exist. How many members here would make their preparations up to the standard? Who was there that did not dilute their mixtures more or less?

"Dr. Squibb was called upon, and replied that he had nothing to say. 'Let him who is without offence cast the first stone.' He had no desire nor heart to enter into the discussion.

"A member moved that the vote be taken by ayes and noes. Carried.

"Mr. A. B. Taylor moved that the chair order all the delegates to be present when the vote shall be taken. Carried.

"While the order was being enforced, a general discussion took place. One member said that while apothecaries were selling liquors over their counters, thus encouraging intemperance, he could not vote for the expulsion of Mr. Stearns. Mr. Memminger stated that, however that might be, still he did not believe 'that two wrongs could make a right.' If there was any virtue in this association, a violation of its ethical code called for expulsion.

"Mr. Stearns said that he wished to be understood that he only was to be judged for the past. He had no promises to make for the future. He might have resigned, but he was no such coward. He wished the convention to act on the past, the future would take care of itself.

"Several members then proceeded to speak in favour of Mr. Stearns; one said that his was no error at all, as he sold a weaker preparation at a cheap rate. Another wished to have the further consideration of the matter postponed until the next annual meeting. Still another said that Mr. Stearns himself wished this matter disposed of now.

"Dr. Squibb said that if he had no higher motive in the introduction of those resolutions than the punishment of Mr. Stearns, they would never have been introduced. If the effect was to begin and end there, he would withdraw them at once.

"The question was again called for, and the secretary proceeded to read the substitute, and then the chair put the question. The vote was taken by delegations, each member answering aye or no. The substitute favoured a vote of censure, and was lost—the vote standing, nays, 64; yeas, 30.

"The question then arose on the original resolution.

"It was moved to postpone the question until next year, in order to allow Mr. Stearns time to prepare himself, and to give him opportunity to stop the business altogether. Lost, by a vote of 24 to 56.

"The original resolution was then given another reading, and passed by a vote of 63 ayes to 22 noes.

"The chair said that it therefore became its painful duty to announce that the resolution had been carried, and that therefore Mr. Frederick Stearns was expelled.

"Mr. Stearns came forward, gave up his card of invitation, and, with a voice choked with emotion, said, 'I have been expelled hastily, and without cause. I have been expelled for the past; you can judge of my future by what I do.' He then withdrew from the convention."

COPPER AN ANTIDOTE AGAINST CHOLERA.

At a meeting of the Académie des Sciences, M. Dumas gave a brief analysis of Dr. Burg's report on the preservation from cholera of men engaged in working with copper. He said, in effect, statistics clearly prove that wherever the manipulation of copper was carried on, the men engaged in it have almost invariably escaped harmless. The investigations into the subject were conducted under the supervision and control of the commissaires of police, and may, therefore, be implicitly relied on. The number of men who died of the epidemic in 1865 was eight, three of whom were engravers, one optician, one polisher, or burnisher, and one turner. In 1866 the mortality among them from the same cause was exactly the same. According to M. Burg, several of these deaths appeared to result from exceptional circumstances; they were either out of work or under bad sanitary conditions. To enable it to be clearly understood what proportion these numbers bore to the great body of workmen engaged in copper works, it must be stated that the census of 1866 showed that there were in the department in which Paris is situate 122,838 workers in metal, and it is putting it below the mark to say that of this number at least one-fourth—that is to say, nearly 31,000—are engaged in working copper in some form or another. Deducting boys under twelve years of age employed in the same work, there remained upwards of 26,000 adults really workmen, consequently the number of deaths in the years specified was in the proportion of three to every 10,000. Further inquiries were made with the view of ascertaining if the preservation varied in accordance with the degree in which the metal was handled by the operatives. The result of this branch of the inquiry, it is said, proved the correctness of the theory. Among gold and silversmiths and watchmakers, the total number of whom was 11,500, there were sixteen cases, and there died one of every 719 employed. Among makers of metallic spectacle frames, engravers on copper, men engaged in plating copper, polishers, rollers, and coiners, the total of whom was 6000, there were six cases, the mortality being one in 1000. Among founders, tap-makers, lamp-makers, workers in bronze, sham jewelry, and copper utensils, the number of whom was 14,000, there were seven cases; the mortality was one in 2000. Among opticians, makers of mathematical instruments, dry polishers, stampers, turners, and musical instrument makers, the number of whom was 5650, there was no case at all. Thus the rate of mortality diminished in proportion as the workmen were more exclusively employed in the manipulation of copper. In other manufactures the mortality was from ten to forty times greater. Further testimony in favour of the preservative action of copper was supplied by the society known as the Bon Accord, which was founded in 1819, and entirely composed of workers in bronze, and the medical registers of which are thoroughly well kept. During the whole of the five visitations of cholera, this society, the members of which were scattered in quarters where the epidemic raged with the greatest virulence, had not only not had a single death, but had been called upon to pay only for 106 days of sickness, divided among ten members of the society. Facts supporting the theory were also supplied from other sources. The conclusion drawn from this statement was, that if further inquiries established the truth of the theory exceedingly valuable results, from a hygienic point of view, would follow.

ON THE GATHERING AND CURING OF CARRAGEEN IN MASSACHUSETTS.

BY G. HUBERT BATES, SCITUATE, MASS.

Suborder: Rhodospermeæ, family *Spongiocarpeæ*, Harvey. The generic name, *Chondrus*, is characteristic of the substance of the frond, being derived from the Greek word signifying cartilage.

Habitat: Rocks in the sea. Perennial; spring. Root, a disk throwing tufts of many fronds, which are from two to twelve inches high, very narrow and subcylindrical at base, but immediately becoming flat, generally dilating from the base till it becomes three or four lines wide, and then dividing repeatedly and dichotomously (by pairs), each division spreading, becoming narrower than the preceding one, and taking place at shorter intervals. The summits are bifid, the segments varying greatly in length, rounded or acute, straight or curved, and often twisted in such a manner as to give the curled appearance denoted by the specific name *crispus*. "Fructification roundish or roundish-oval, subhemispherical capsules imbedded in the disk of the frond, prominent on one side and producing a concavity on the other, containing a mass of minute, roundish red seeds." Its colour is a deep purple-brown, often tinged with purplish-red, paler at the summit, and becoming greenish and at length yellowish-white as the season advances.

This is the Proteus of marine *Algæ*. The varieties are innumerable, and pass into one another so insensibly that it is almost impossible to define them. There is great range in regard to the width of the frond. Whenever the plant grows more or less exposed to fresh water, a still greater change is wrought in its appearance. The main divisions are much broader, fewer, and exceedingly irregular, while the margin and extremity are beset with such a vast number of small segments that the whole suggests the idea of monstrosity. In such specimens the frond, when held between the eye and the light, is thinner, more transparent, and frequently mottled with green. It occasionally happens that the margin is somewhat raised, so as to render the frond slightly channelled, but seldom so much as to allow of its being mistaken for *C. mammillosus*. The pink seeds are very conspicuous when held between the eye and light. When fully ripe, the capsules fall away entirely, and leave the frond full of holes. Greville concludes his admirable description—parts of which are included in the above—by remarking that "it is difficult, in words, to convey any idea of the variableness of this species."

The varied uses of carrageen in manufactures make it an article of considerable importance; and the present high prices of glue and isinglass, for which it is an excellent substitute, have created a demand for it heretofore unknown. Up to about the year 1848 all the carrageen consumed in this country was imported from Ireland, which gave it the popular name of Irish moss. It was collected on the southern and western shores of that island, and was converted into size for house painters, and also esteemed for medicinal and culinary purposes. That imported to America was used in making custards and *blanc-mange*, and sometimes sold as high as 75 cents per pound, retail. In 1849 several parties commenced making a business of gathering and curing *Chondrus crispus* at Scituate, Plymouth county, Massachusetts, and produced the first considerable quantity of the domestic article ever sold in Boston. This is still the only point in the States where any noticeable amount is collected, the business having lately been largely increased, until the annual crop is not far from 500,000 pounds—equal to about 6000 barrels.

Its range.—Some seaweeds are cosmopolitan, and are equally abundant in all latitudes; but generally *Algæ* are more or less local in their distribution, and different marine floras are found in the different parts of the ocean. The degree of exposure to light, and the greater or less motion of the sea, have an important effect. The green *Algæ* occur either in the shallower parts of the sea or in fresh water; the olive colour is characteristic of those seaweeds that abound between the tide-marks; while the red-coloured species grow in the deeper and darker parts of the ocean.

The Suborder *Rhodospermeæ*, in which Harvey classes the *Chondrus crispus*, seem to flourish in the temperate zone, while *Chlorospermeæ* increase as we pass northward, and *Melanospermeæ* towards the tropics But while *Chondrus crispus* appears, under certain conditions, to abound in the temperate zone. it is generally incrusted with various minute mollusca that cause its rejection by the dealers. The rocks on the shores of Scituate, in the main, undoubtedly produce the best article yet discovered in this country. But there are ledges here, where the mussel attaches to the plant, that are wholly abandoned by the mossers. Indeed, the range of the clean-growing *Chondrus* seems to be very limited.

It has been remarked by those who have visited Cape Ann and the eastern shore for the purpose of testing the quality of the moss growing there, that the product of those parts is of a coarse and limy character. Perhaps, however, this moss, in some instances, may be susceptible of improvement. The old plant should first be entirely removed, which would be immediately succeeded by a new growth; and if this exhibits a marked superiority over the old plants much may be expected of the ledge, for each successive "pull" will produce an improvement in the moss. That the abundant moss growing to the eastward has not been fairly subjected to this test, and the improved article brought into market, indicates either a want of knowledge of the necessary process of improving, or the absence of those whose habits would naturally lead them to engage in the business; or it may be that the plant in that quarter is not susceptible of any improvement, as the report goes.

As regards perpendicular direction, Forbes remarks that one great marine belt or zone lies between high and low-water marks, and varies in species according to the kind of coast, but exhibits similar phenomena throughout the northern hemisphere. This is denominated the littoral zone, and necessarily varies according to the rise and fall of the tides. If I am right in my identification, the *Fucus canaliculatus* forms the upper sub-region of this zone, followed by a broad belt of *F. nodosus*, and, perhaps, *F. vesiculosus* and *F. serratus*. This is succeeded by a narrow belt of *Chondrus crispus*, interspersed with *Rhodomenia palmata* and *Laminaria saccharina*, which is exposed only at low ebbs. The *Chondrus crispus*, however, extends some distance below low-water mark into the laminarian zone, its fronds increasing in width as the water becomes deeper. The laminarian zone extends to a depth of from seven to fifteen fathoms. Here the great sea tangle, *Laminaria digitata*—improperly called kelp—abounds.

Gathering and Curing.—The mossers begin the "pull" of moss late on the spring tide of the full moon of May. This is earlier than it should be, for moss, like the grass in our pastures, attains but a feeble growth in the month of May. This prematurely-gathered moss suffers a great loss by shrinkage, and cannot be made to "hold its colour" when bleached. This practice is probably owing to the restlessness of those mossers who, having no gardens to plant, or but small ones, become weary of the idleness of winter, and are anxious to resume their customary labour.

Before any moss is pulled, however, the "bleaching beds" are carefully prepared. For these, sandy portions of the beach near the creeks are selected. The stones thrown upon the old beds by the action of the sea are raked off into something like wind rows, which divide the plats. The contents of the shanties are overhauled. Hand-barrows, pulling-rakes, turning-rakes, and washing-tubs are put in order or replaced with new articles. The boats receive careful inspection. A coat of paint or an application of tar is, perhaps, the result. These boats are frequently loaded to the water's edge, and, when the supply of the more adjacent ledges is exhausted, often perform trips of several miles with such a freight. A leaky boat would be unpleasant—not to say dangerous. The "navigation" is, however, generally very safe, notwithstanding it is over ledges of rocks that are known to all mariners as extremely dangerous to shipping.

The *Chondrus*-bearing ledges are all within a few miles of the celebrated Minot Ledge light-house. Seven shipwrecks have been counted at one time on this shore, all in plain view. The light-tower rises 90 feet from a submerged rock, but at this writing the sea breaks against it so high that at times it is entirely hidden from sight! Yet in a few months scores of men will be moving about among these rocks, gathering a crop that hardly one in a thousand in the States knows anything about!

The tools of the moss-gatherers are few and simple. The pulling-rake is the most important. It is a long-handled rake, with long, flat iron teeth set closely together. The tub is a half-hogshead; the turning-rake a common hay-rake; while the boats vary considerably, but are good in a sea-way, especially when handled by experienced men.

The spring tides are selected for pulling, because the tide ebbs out lower than at common or neap tides. Spring tides occur at every new and full moon, when it is always high-water a little before twelve o'clock; so the pulling comes at morning or evening, or both. The spring tides also expose a superior and cleaner variety of the plant, which is "hand-pulled" and carefully cured. Apothecaries buy this, and in the form of delicate *blanc-mange* it finds a welcome at the table and at the couch of the invalid.

The period of the spring tides is an exciting time with the mossers. The song of the boatman as he rows, the merry laugh and frolic of the boys, indicate that harvest time with them is come, and that before the husbandman has sown his corn! It is not intended to intimate, however, that moss-raking is as pleasant as raking red-top and clover. On the contrary, many tough farmer boys, after wading and pulling moss among the rocks on a cold morning in May, would doubtless abandon the business in disgust. A nervous man would hardly like it. There is a certain animal that roams among the rocks around, with such powerful pincers as to inspire a constant solicitude for the extremities; and woe to the luckless wight who comes in contact with them. Over a hundred thousand lobsters are taken annually by the fishermen of Scituate.

At the earliest dawn the boats are launched and rowed to the rocks where the best quality may be found. If it is a very low ebb, the boat is forced as far among the rocks toward the shore as it will float, and the "hand-pulling" is vigorously commenced. The gatherers are not confined to the rocks immediately adjacent to the grounded boats. These exhausted, they wade to others and pick into baskets. Great care is constantly exercised to get good, clean moss, free from minute shells and tape-grass, for upon this the mosser reckons his price per pound. This pull also receives particular attention in bleaching and packing, and finally fetches two or three times as much as the common kinds.

As the tides in ebbing finally cease to expose the belt of rocks that produce the favourite variety, the marine farmer repairs with boat and rake to the outer *Chondrus*-bearing rocks, whose abundant crops wave and surge with the swell. Here the iron teeth do great service, coming up filled with a variety that contributes largely to the wants of the brewer and the cloth manufacturer. This moss is never so free from a living coating as the hand-pulled, and is mixed at first with tape-grass (*Vallisneria spiralis*) and other foreign substances. If he be an honest mosser you will, nevertheless, get a good article. Some men can scarcely fail to make good carrageen of any gather, and they should be encouraged. Messrs. Howe and French, of Boston, are doing more in this direction than any other dealers.

The advancing tide or a laden boat compels a return to the shore. The boat is shot upon the beach, and the hand-barrows come into use. Two men soon carry away the load to the top of the beach, where it is spread on the bleaching-beds to dry. The remaining process any good housewife of the olden time well understands. Like the linen at the spring, it must be alternately wet and dried until the proper degree of whiteness is attained.

. The washing is done in the tubs on the banks of the creeks which intersect the marshes and often approach the beach. Salt water alone can be used, as the moss is very soluble in fresh. The tubs are quickly filled with a "long-handled" bucket, which must be an Irish invention, taking rank with the long-handled shovel. It is, albeit, a very expeditious method of filling half-a-dozen half-hogsheads. In the "wash" the moss is well rinsed, and all floating pieces of tapegrass picked off. The water is then allowed to drain off, provided there be any unabsorbed, and the tub thrown on to its chine, and dexterously rolled back to the beds. The spreading is repeated, and presently the whole is turned with a rake,—the curer, if he be a careful one, still picking out the poor pieces. The mosser gives a great deal of attention to the bleaching, which, in fine weather, is accomplished in about six washings. At low tide he still continues the pull with the boat and rake.

When the beds are covered with moss, the heavens are as anxiously scanned as ever in hay-time, and on the approach of rain a bustle is incident that is only equalled by that of the haymaker. The moss, if dry, is snugly cocked up like hay, and covered with canvas. If the bad weather continues some time, it is as fatal to the carrageen as to the hay, and is bound to turn out a damaged article, if circumstances are not the most favourable. If exposed to a long rain, it rapidly dissolves.

At the spring tides the beds are generally covered with the freshly gathered moss, looking black and uninviting; but as the bleaching advances, the peats first appear to turn to a delicate red colour, and finally assume a yellowish whiteness that is very pleasing to the eye. When the carrageen is properly cured it is stored in bulk in the shanties. As leisure comes, it begins to find its way into barrels. This is a time of temptation. A barrel of well-cured and honestly-packed moss should certainly never exceed a hundred pounds, and the average weight should be less than that. They frequently are made to weigh one hundred and twenty-five pounds. Specimens of our beach sand have doubtless been admired wherever Irish moss has found a consumer. Sometimes the moss *gathers dampness* at packing-time, which is the more singular, as the weather is generally dry.

The careful mosser still picks over, and sorts as he picks, and his moss is now a white, clean, and saleable article. A boy "treads in" as the final picking goes on. The nails that jingle in his pockets to the tune he whistles will hold the hoops and heads in their places. The barrel then awaits shipment, per packet, to Boston.

About the first of September the majority of the mossers close up their work on the beach, and fit out for the herring fishing. A few linger and cure another pull, if the weather favors.

As the number of men who make it their business to collect and cure this plant is increasing every year, the question is often asked, "Will it run out?" It is not certain that the rocks, like some well-tilled soils, are increasing in depth and fertility, but it is certain that the moss grows of a better quality and quite as quickly, the oftener it is pulled.

Its Uses.—There is always a demand for a prime article of Irish moss for culinary purposes, but the amount thus consumed is comparatively small, as a limited quantity of moss yields a large amount of jelly. In the form of *blanc-mange*, it is an agreeable and nutritious article of food.

In Ireland carrageen is highly esteemed for its medical virtues, being regarded by some as a universal panacea. It was once a fashionable remedy in consumptive cases. As a demulcent for colds and fevers, it is very effective. Carrageen has been much confounded with *Cetraria islandica* (Iceland moss), which contains starch along with a bitter principle, used as a tonic and demulcent. This opinion has extensively prevailed, and many still assert that the edible *Algæ* of Ireland and the lichen of Iceland are identical.

Its most important use is as sizing, it being used in the manufacture of cloth, paper, and felt and straw hats. The poorer qualities of moss are bought up for size. The hand-pulled moss, however, contains more starchy matter than the variety which is never exposed to the air. The second quality of moss is sold to the brewers. All beers, when well brewed and sound, after a certain repose, become transparent or "bright," as it is sometimes termed. When, however, beer is sent out very new, it is necessary to "fine" it, or impart to it that "brilliant transparency" which is so agreeable to the eye This is done by means of finings. In Europe isinglass is used for this purpose, and a lengthy formula is given for its preparation; but in this country Irish moss performs the same service without any preparation other than that given it by the curer. A certain amount of the moss is boiled up with the beer. The fluid gelatine unites with the tannin of the hops and forms a flocculent mass, which, enveloping the suspended feculencies, produces the clarifying action desired. The impurities are removed in the form of scum, while with isinglass they are carried to the bottom in the form of sediment. The beer is called "stubborn" by the brewers when a disengagement of carbonic acid gas occurs, the flocculent particles being thereby kept moving about without clearing the beer.

It is also used for fining coffee, and, if it has no other recommendation, it is certainly cheaper than eggs.—*U. S. Agricultural Report for* 1866.

SHAM DRUGS.

The following evidence was given by Mr. Holmes Coote before a Committee appointed to inquire into the venereal disease:—

"Q. 4221. What treatment would you adopt in that anæmic condition which you have just mentioned?—I should recommend rest and moderately good diet, and mercury in very small doses, and sarsaparilla.

"4222. Do you believe that sarsaparilla has any beneficial effect?—I have no doubt of it, if properly administered. If you give sarsaparilla to a person who is drinking half a bottle of port wine a day, it does no good; but if you put him on light diet and then give him sarsaparilla, it will produce an effect which is good. We give a very concentrated essence of sarsaparilla at the hospital.

"4223. Is it what is called the fluid extract?—Yes; we have our own preparation at the hospital.

"4224. In private practice what do you use?—The concentrated decoction as prepared by good chemists.

"4225. Is it a decoction, or that of which you put a spoonful into a quantity of water?—It is the latter. I should give it about five or six times as strong as it is ordinarily given."

A correspondent to the 'Medical Times and Gazette' of Sept. 25th, in commenting on the above, states, as a singular fact, that the St. Bartholomew's Pharmacopœia, as abstracted by Mr. Squire in his 'Hospital Pharmacopœias,' substitutes hemidesmus for sarsaparilla; the former a drug of low price, and once tried as a substitute, but now condemned as worthless. He asks the question, "Does the cheap sham drug really do as well as the costly sarsaparilla?" and, "Are we to believe that good chemists use hemidesmus, and charge fraudulently for sarsaparilla?" Or are we to believe that, with all the pomp of an ancient endowment, the patients of St. Bartholomew's are not supplied with what one of the surgeons believes to be a valuable remedy, because of its cost?

ACCIDENTS FROM IGNITION OF PETROLEUM, AND PENALTIES FOR INFRINGING THE PETROLEUM ACTS.

Explosion of Petroleum Spirit at Bordeaux.—We have to record another of those lamentable accidents from this inflammable agent, which has resulted in the destruction of an immense amount of property. It appears that, on September 28th, the steamship 'Count of Hainault' arrived in the Garonne from Antwerp, having on board a cargo of about forty tons of petroleum and petroleum spirit, and was moored at Lormont, about three miles below Bordeaux; and, having complied with the precautions required by the port for ships with cargoes of this dangerous nature, proceeded to discharge her cargo into two barges, which was completed at six o'clock. About a quarter of an hour after this had been done, one of the men in charge of the barge containing the petroleum spirit, after having lighted a torch, threw the still burning match among the casks of petroleum, one of which immediately caught fire, producing a terrible explosion, by which the man who was the cause of it and a custom-house officer who accompanied him were dreadfully burnt about the face, legs, and hands. In a few moments the barge was enveloped in flames, when the ropes which secured it to the shore, catching fire, snapped asunder, whereupon the burning mass drifted with the tide up the river, facing the general warehouses. Some small steamers belonging to the port authorities, with sailors and firemen on board, at once got up steam and made for the still burning barge, which they temporarily secured with a chain, and then made efforts to sink by pumping water into it, but for a considerable time without avail. In the course of these proceedings one of the steamers caught fire at the bows. Eventually, the commander of the life-boat 'Monte Christo,' after the repeated orders of the captain of the port, succeeded in scuttling the barge at the stern. It was now imagined that all danger was over. A train of liquid fire, coming from the barge, was drifted by the current in the direction of a mass of ships, and speedily communicated itself to them. Almost at the same moment three or four vessels were discovered to be on fire, with no means at hand of rendering them the smallest assistance. Up till eleven o'clock the tide was coming in, and, the floating fire rising with it, several other ships became ignited. Those most heavily laden were the first to suffer, as their copper bottoms being below the water-line their wooden sides offered no resistance to the flames, whereas the unladen vessels, protected by their copper, for the most part escaped. Within the space of less than a couple of miles, something like five-and-twenty ships were to be seen on fire at the same moment. At half-past seven o'clock the following morning, fourteen vessels were still to be seen in flames, or smouldering with their hulls burnt almost down to the water's edge. The damage done is estimated by the port authorities at ten millions of francs.

The Chairman of the Board of Works, in referring to this case, said that in the event of any explosion on any of their wharves, the burning petroleum might find its way into the sewers, and from them into the Thames, and thus endanger the shipping. He thought they ought to be particularly careful in granting licences, and he called upon Captain Shaw to give them a report and all the information that he could afford the Board on this important question.

Ignition of Petroleum at Sea.—On Saturday, September 11th, the steamship 'Lady Wodehouse,' on her way from London to Dublin, encountered a heavy gale. Part of the cargo consisted of petroleum and lucifer matches. The lashings of the petroleum casks gave way, and being dashed against the chests of lucifer matches, immediately ignited, and the casks rolling towards the centre of the vessel, set fire to the sides of the saloon, fired two of the lifeboats, the flames rising with fearful rapidity above the deck. The scene, it is said, lasted three hours; but happily, by the judgment of the captain and the untiring exertions of the crew, the fire was subdued. But the flames broke out a second time, when the petroleum casks and the lucifer matches were thrown overboard, and the ship, after contending fruitlessly with the storm for twelve hours, put into Dungeness, where most of the passengers were landed.

Convictions under the Petroleum Act.—Messrs. Thorogoods, of Giltspur Street, were summoned for having kept a quantity of petroleum on their premises, contrary to the provisions of the Act. They had made two applications for a licence, but had been refused. A penalty of £5 was inflicted.

Several other cases have occurred in which penalties have been inflicted for similar offences.

Penalty for Sending for Shipment Goods of a Combustible or otherwise dangerous nature, without due Notice.—Public notice has been given that a penalty of £20 attaches to all parties sending to the London, St. Katharine, or Victoria Docks, for shipment goods of a combustible or otherwise of a dangerous nature, without their description being distinctly marked on the tops of the packages containing the same. Sufficient information as to the nature of the goods must also be contained in the shipping-note, and such articles will not be received at the docks until the export vessel is ready to take them on board. Nitro-glycerine or glonoine oil will not be received for shipment at the docks under any circumstances.

DANGEROUS EXPLOSIVE AGENTS.

The numerous accidents arising from want of care in the use of explosive materials seem to demand the special attention of those engaged in their manufacture and application. Besides the disastrous explosions of what is called "petroleum spirit," several minor accidents may be recorded. On Saturday, October 9th, a fire occurred at Mr. Hooper's, Chemist, Russell Street, Covent Garden; which was subdued before much injury was done. It was caused by the vapour of spirit of wine coming in contact with a gas light.—On the same day another fire, at Messrs. Hawkes and Co., army accoutrement makers, Piccadilly, was caused by the boiling over of spirit of turpentine; in this case one of the workmen was badly burned, and much destruction of property was the result.—A third fire is reported at Dockhead, occasioned by the accidental ignition of lucifer matches.

CASES OF POISONING—ACCIDENTAL AND CRIMINAL.

Deaths from Chloroform.—A case is recorded of a man, aged 50, at the North Staffordshire Infirmary, Hanly, to whom, previous to an important operation, 15 to 20 drops of chloroform was administered on lint. The patient had inhaled the chloroform 3 or 4 minutes, when the pulse suddenly stopped, and the man ceased to live.

At the Charing Cross Hospital, an inquest was held by Mr. Langham, to inquire into the case of Mr. Charles Verner, aged 39, an actor, who died under the administration of chloroform,* previous to undergoing an operation for diseased jaw-bone. The chloroform was given at the request of the patient, who had been told by the medical officers that great danger would attend the administration of chloroform. The sufferings he had endured were so great that he was prepared to take the risk. The jury found "that the deceased lost his life by the administration of chloroform, but that the chloroform had been skilfully and properly administered."

Several other cases have been reported lately, in nearly all of which a diseased state of the heart was found on examination.

Alleged Poisoning by Hair-Dye.—Dr. Witherwax, of Iowa, died with peculiar and obscure symptoms. The Scott County Medical Society appointed a Committee to investigate the causes which led to his death, it having been surmised that he died from the effects of lead poison. The Committee, in their report, unanimously concur in the opinion that the poison was introduced into the system through the use of hair-dressing or dye, which dressing had been used by Dr. Witherwax almost daily for four years. Four separate analyses of the liver, and one of the kidneys, showed the presence of lead in these organs.

Attempted Suicide by Sugar of Lead.—A man was found in the City Road suffering from the effects of poison. He was removed to St. Bartholomew's Hospital, where emetics were administered with success. It appeared that the man had obtained medicine at the Hospital, and was supplied with a lotion containing sugar of lead, for an injury to the shoulder, some of which he had swallowed, in consequence, as he alleged, of being in a very depressed state of mind.

MISCELLANEA.

Opium in China.—It appears from this year's consular reports from China that the consumption of opium in that empire is increasing, and that there is an increased growth of opium in China itself. Early in the year, an Imperial decree was issued strictly prohibiting the cultivation of the poppy plant in the Chinese empire, and alleging that there would be danger of its interfering with the growth of food and causing a scarcity of the means of subsistence; the apprehension of loss of tariff-duty by a lessened importation of Indian opium may, perhaps, have been an influential reason for the decree. It threatens offenders with merited punishment, but attaches no specific penalty to disobedience; and it is thought that this decree will have no more effect than that of 1865 to the same purport, and that it will most likely be chiefly used by officials as an occasion for extorting money from the pockets of producers. There is evidence of extensive poppy cultivation in several parts of China. It has spread rapidly within the last few years in the vast region of Eastern Mongolia and Northern Manchuria, and is thence brought down to the coast, competing with Indian opium in the Newchwang market. Opium is grown also in several southern provinces. It has been grown for years in the extreme south-west, in the province of Yunnan, the larger proportion of which has thrown off its allegiance, and is now practically an independent kingdom, governed by a Mahomedan, named Tu-Wen-hsin, said to be styled by his subjects the "Hsi-Mi-Kuo-Wang," or "King of the Consolidated West," and who has established his court at Taili-fu, not far from the frontier of Burmah, called by the Chinese "Mien-tien." Mr. Mongan, the British Consul at Tien-tsin, states that opium is brought into that port either crude or prepared. In the former state it is generally spoken of as "tu," earth, or clay, from its resemblance to lumps or cakes of common clay; and the native, as distinguished from the foreign, which is termed "yang-tu" or foreign earth, is called "hsi-tu" or western earth, a name which seems to have a geographical reference to producing provinces. Prepared opium, called "ya-pieu-kao," is at Tien-tsin generally composed of foreign and native drug boiled down, and often largely adulterated with glutinous substances, such as a decoction of the berries of a leguminous tree called the "huai-shu," which grows abundantly in that part of the country. In quality some of the Chinese opium is not much below Malwa; but it is inferior in strength and flavour, and smokers prefer the Indian drug, although its price may be double that of the native; and in fact the latter is chiefly used for mixing with the former, seven-tenths foreign to three-tenths native.—*Times.*

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* In this case bichloride of methylene was used.

Test for Detecting very Minute Quantities of Iodine.—Take water 100 grms., starch 1 grm., nitrite of potassa, 1 grm.; boil this mixture during five minutes, and after cooling, pour it into a bottle. When required for use take 10 c.c., add one single drop of hydrochloric acid. Take as much as a pin's head in size of the dry salt to be tested for iodine, place it in a clean porcelain capsule, and add one drop of the test-fluid last mentioned. The least trace of iodine gives rise to the formation of a well-defined blue colour. The liquid test-fluid, after addition of HCl, keeps quite well in a properly stoppered bottle.—*M. Alfraise, Chemical News.*

Bites of Insects.—It would be well if we could follow some of our tormentors of the insect world through their daily life and discover their loves and their hates. Linnæus informs us that the seeds of the *Absinthium maritimum* are deadly to the flea, and we have likewise [illegible] that the odour of the elder is equally obnoxious to other insects. It is said by the devotees of botany, that on a hot summer's day the cattle may be seen to cluster round the elder for protection against the sting of flies; we have thought sometimes in our summer rambles that the verdict of the wise was unproven. We entertain, however, a strong belief that the perfume of the chamomile is destructive of the *Acarus scabiei*, and we use it accordingly in our pomades for the treatment of scabies. Bazin was wont to recommend for the same purpose an *Unguentum anthemidis;* and our Italian contemporary, the 'Giornale Italiano delle Malattie della Pelle,' reminds us that an infusion of chamomile flowers has been recommended as a wash to the skin, for the purpose of protection against gnats. Gnats are said to shun the traitorous perfume; and if such be the case, it would be easy to convert the essential oil of the anthemis into an agreeable lotion like that of lavender-water or eau de Cologne.—*Journal of Cutaneous Medicine and Diseases of the Skin.*

A New Vine Disease.—The vine-growers in France are in a state of great consternation at present in consequence of the attacks made on the roots of the vine by a parasitic insect, the *Phylloxera vastatrix*, the ravages of which are said to exceed in extent those of the celebrated oïdium. All means of destroying it have hitherto proved fruitless; its ravages, on the contrary, are on the increase, so that quite a panic prevails among growers in districts beyond those at present infested. M. Naudin, in a recent communication to the Academy of Sciences, points out that the vine is cultivated in an unnatural forced condition, and becomes predisposed to, and unable to resist, morbid influences. Although this may be necessary for its productive cultivation, he believes that much may be done to obviate the consequences of the exhaustion of the soil which at present takes place. He especially recommends sowing the soil with cruciform plants for a year or two, and digging these in as green manure. M. Marchand, as a more direct remedy for the present evil, strongly recommends the employment of sulphuretted hydrogen for the destruction of the *Phylloxera*. At present all is perplexity.

Antidote of Nicotine.—M. Armand proposes that the deleterious effects of the use of tobacco should be counteracted, if not entirely annihilated, by moistening tobacco, while undergoing the various preparations and fermentations previous to its delivery to the consumer, with a strong infusion, or other preparation, of watercresses; since the author has discovered that this vegetable contains principles which, without destroying the peculiar aroma of tobacco, destroy the deleterious effects of nicotine.—*Chemical News*.

REVIEW.

CHEMISTRY: GENERAL, MEDICAL, AND PHARMACEUTICAL, INCLUDING THE CHEMISTRY OF THE BRITISH PHARMACOPŒIA. By JOHN ATTFIELD, Ph.D., F.C.S. Second Edition. Van Voorst, 1869.

The appearance of a second edition is a sufficient indication that Dr. Attfield's work has attained success. It is indeed a most useful manual. It is a necessary companion to every student following the system of practical instruction at the Society's laboratory; it is also the best possible guide to the Pharmaceutical pupil who cannot indulge in laboratory tuition; and it is almost the only book from which the medical student can work up the pharmacopœial chemistry required at his examinations. It would even be a useful text-book to the learner of pure chemistry, if its "official" character did not in that case prove a useless complication. Dr. Attfield's experience as a teacher, first as Demonstrator of Chemistry at St. Bartholomew's Hospital, and afterwards as Director of the Laboratory at Bloomsbury Square, has rendered him thoroughly familiar with the requirements of medical and pharmaceutical students; and in writing the present manual, he has kept these wants primarily in view. The result is certainly successful. By a series of well-contrived simple experiments, the reader is gradually led to understand the rationale of all the chemical processes included in the ordinary curriculum of pharmaceutical chemistry. All the essential points which can be required in an examination are thus forcibly impressed on the mind, in a form in which they can be remembered and repeated, while the technicalities and difficulties of the subject are, as far as possible, excluded. If we could find any fault with this mode of treatment, it would be that the student is apt to leave the book with too large a notion of what he has learnt, and too small a conception of what there is yet to acquire. It appears to us that the title of the book may also favour such a result. 'Chemistry: General, Medical, and Pharmaceutical,' is a very comprehensive heading. Dr. Attfield can hardly intend his readers to assume that the work in question includes all the chemistry that a well-educated medical practitioner or a pharmaceutical chemist requires to know.

The plan upon which Dr. Attfield has constructed his manual is original, and considering how many chemical text-books are written upon the model of their predecessors, this is of itself a merit.

Commencing with the description of a few simple experiments on the general properties of the most common non-metallic elements, the author makes his readers acquainted with the first facts of chemistry, and at the same time gives them a notion of manipulation. Then follow a few chapters on the elements, chemical force, notation, formulæ, equations, atomic weight,—in fact, the general principles of chemical philosophy. In this part, the latest views upon the subject are most clearly and succinctly laid down, with scarcely a reference to the older and now exploded notions.

The next section treats of the *common* metallic elements, their official preparations and tests. Here, under each metal, the student is familiarized with all he has to learn by a set of "reactions," which are divided into two classes, those having a synthetical and those having an analytical interest. By a reaction of the first class, some pharmacopœial compound is produced, the decomposition occurring being then explained, together with any facts of interest. By the second class of reactions the student is taught to recognize the metal in its different combinations. Following this treatment of the common metals are some analytical tables for recognizing the same metals in presence of each other. The rarer metallic elements are afterwards treated in a like manner, and further analytical tables given.

Succeeding sections treat of the acids or "acidulous radicals," the common ones being described first, and the rarer ones afterwards. Thus, by a set of "reactions," the production of chlorides, iodides, sulphates, tartrates, citrates, etc., is explained, and the tests for recognizing each acid are given. It will be seen that thus the arbitrary distinction of inorganic and organic compounds, which has been hitherto so constantly maintained in our chemical manuals, is to a great extent broken down. Another important feature of the work is the introduction of a set of questions at the conclusion of each chapter. These will be of the greatest possible use to the student, in testing his knowledge as he proceeds, and at the same time accustoming him to the ordeal of the examination room. Under the heading of Quantitative Analyses, the different volumetric estimations of the Pharmacopœia are fully described. Sections of the work are also devoted to toxicology, and to the testing of urine and urinary calculi. In an appendix are given a number of very useful tables, including the latest and best tables of the strengths of the different liquid acids according to their specific gravities, showing at once the percentage of anhydride, of acidulous radical, and of real acid. There are also some new saturation tables, indicating the quantities of carbonate and bicarbonate of potash, carbonate and bicarbonate of soda, carbonate of ammonia, and carbonate of magnesia, which are equivalent to each other in saturating power, for any given quantity of citric or tartaric acids, ranging between 20 and 30 parts. These will doubtless be found very useful in prescribing or dispensing.

We have probably said enough to show that there is much originality in both the plan and style of this book: let us add our conscientious belief that what is new is also good. To a beginner in Pharmaceutical Chemistry we could not recommend a better manual.

BOOK RECEIVED.

THE SHIP CAPTAIN'S MEDICAL GUIDE, compiled by HARRY LEACH, Resident Medical Officer, Hospital Ship, 'Dreadnought.' Third Edition. London: Simpkin, Marshall, and Co., Stationers' Hall Court. 1869.

This Guide, which is published under the sanction of the Board of Trade, consists of rules to be observed in the prevention of disease; the treatment of accidents and cases of poisoning; there is also a scale of medicines, with directions for their use, as well as other information useful to seamen.

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the EDITOR, 17, Bloomsbury Square. Those received after the 20th of the month cannot be noticed in the ensuing number.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to ELIAS BREMRIDGE, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. CHURCHILL, New Burlington Street, London, W.

METHYLATED SPIRIT.—CAUTION.

Sir,—Permit me to offer some remarks tending to the general interests of the trade, and having reference to methylated spirit, for an alleged sale of which I have recently paid a large amount. It is of course needless to apply these remarks to those who purchase and deal in this compound largely, and to whom a licence is a *sine quâ non;* but, throughout the drug trade there are hundreds who, like myself, never have more than a gallon in stock, and that for occasional use in the business; and who do not contemplate the result of selling a portion in the absence of any licence.

I was recently applied to for four ounces, presumably for a medical purpose, when, in about three weeks subsequently, I received an official document informing me that I had incurred a penalty of £50, and that anything I might urge in mitigation would be heard in due course by the police magistrate for this district. So far the matter ended in a reduction of the fine to £12. 10*s*., against which adjudication others and myself memorialized the Board of Inland Revenue, and eventually obtained a mitigation of the penalty to £1,—there being an exceptional case in which 10*s*. was accepted. For my part, I considered even the reduced amount excessive, and demurred to payment, purposing a further attempt to obtain a total remission of the fine. In a few days however I was spared further trouble, by the appearance of two individuals (whose demeanour denoted that *necessitas non habet leges*), one of whom handed me a repulsive-looking document, which enforced the immediate payment of £12. 10*s*. and costs. This I reluctantly paid.

My subsequent endeavour to obtain a hearing before the Board, in respect of this penalty, simply ended in my receiving the information that "they could only abide by the legal process of a levy warrant."

I shall be very glad to ascertain if it be legal to enforce the payment of the greater penalty when it has already been mitigated to a lesser one, and when no intimation is conveyed in the notice given, that non-payment would subject me to the imposition of the full amount of the fine. Probably the legal adviser of our Society may offer an opinion upon the foregoing. I trust, however, that this communication may deter others from conferring an obligation upon a plausible customer in a similar way, when not in possession of the requisite licence.

I am, Sir, your obedient,
JOHN FARMER.

Putney, October 19th, 1869.

CO-OPERATIVE TRADING.

Dear Sir,—I have read with pleasure Mr. Smith's paper on "Pharmaceutical Responsibility and Remuneration," and also the remarks that followed, but it appears to me they omitted a subject of vital importance to our business in London, namely, the charges of the Civil Service Stores for medicines. Thinking the time has arrived when a few remarks from the Editor of the 'Pharmaceutical Journal' on this subject, and also on that of agency to Civil Service Stores, may have good effect on our members, I cannot refrain from urging you to take this matter up; as it appears to me these things will tend to bring about what the Pharmaceutical Society has to a great extent got rid of, namely, the systematic sale of bad drugs by unprincipled men. With these remarks, I will conclude by giving my reason why, when solicited by persons connected with Civil Service Stores to become an agent in this neighbourhood, I refused.

1. Because it would be unfair to the trade in general.

2. It would not be honest to make a difference between customers in charges varying from 25 to 50 per cent.

3. That no chemist could sell the best articles at the prices set forth in the lists of Civil Service Stores, and live on the profit; for instance, sweet spirit of nitre, 3*d*. per oz., sal volatile, 8*d*. per oz., or 4 oz. and bottle, 1*s*., etc. etc.

4. That any chemist selling at these prices must adopt a course injurious to his character and to the public health.

I am, dear Sir, yours faithfully,
W. W. URWICK.

Dear Sir,—The Society of the Co-operative Agency have thought proper to address to me a letter, dated October 14, soliciting my acceptance of agency. In their book, which was forwarded at the same time, they state, "The Agency effects its object through the medium of wholesale and retail tradesmen of established respectability, who have entered into special contracts to supply ticket-holders with goods at little above the wholesale rate." I turn over the pages to see if any of my brethren have succumbed to their blandishments, and to my surprise I find Pharmaceutical Chemists and Registered Chemists offering to supply the public with drugs and chemicals at 25 per cent. below the retail prices, allowing the stamp off patent medicines.

Is this system to be extended? Can it be possible that gentlemen of education, professing somewhat above ordinary tradesmen, can condescend to put themselves on a level with the owner of a cutting chandler's shop, to draw a few shillings from the till of his neighbour at the expense of his own character? and are our profits so enormous that we can afford to put 25 per cent. into the pockets of our customers at our own expense? for I apprehend the wholesale houses do not allow these traders a proportionate discount. Reduction of price must mean one of two inferences,—either the sale of inferior drugs, or a practice on the part of the vendor (especially in dispensing) of stating a higher price to meet the proportion of discount required. What an encouragement for the rising generation of assistants and apprentices! spending their time and money to qualify themselves, with the probability of competing with such noble members of the Pharmaceutical Society.

I am, dear Sir,
Your obedient servant,
A FOUNDER OF THE PHARMACEUTICAL SOCIETY.

October 16th, 1869.

UNIFORMITY.

Now that pharmacy is bent upon saving itself from absolute beggary, and the work of regeneration about to occupy the attention of our leading men, it behoves us, one and all, to assist, as far as lies in individual power, in removing such obstacles to progress as may present themselves.

That there is much to be done cannot be denied, and it must be equally allowed that shoulders to the wheel, now, as in Æsop's time, will prove more efficacious than uttering lamentations dire and deep: however, the latter seems to afford a temporary relief to some, and when we consider the appalling fall from the ideal to the real experienced by those commencing business, even the least charitable among us would allow such victims to consume their disappointment after their own fashion.

But to the subject; with Mr. E. Smith I sincerely lament the absence of a mutual understanding and good feeling amongst us as a community, with the existence of mistrust and selfishness, which entirely prevent that much-to-be-desired uniformity, not only in prices but in the article supplied.

Take for example, chloric ether. A short time since I was induced to make inquiries respecting its orthodox strength, and for information, turned to the mighty Babylon of modern times, where in three of the first dispensing establishments, I learned the following:—

No. 1 considered chloric ether a solution of chloroform in rectified spirit, and prepared it of the strength one in eight by measure.

No. 2 agreed in mode of preparation, but used a solution of one in ten by measure.

No. 3 also prepared it direct but in the proportion of one in seven *by weight*, or one in twelve, nearly, by measure.

Somewhat confused, I turned to a worthy brother in the provinces, who, like a modern German school on a different subject, cited his belief in *one* spirit, and that the officinal one; this, as we are well aware, contains but one in twenty by measure. Probably Messrs. Duncan and Flockhart would tell me chloric ether is no mere mixture of chloroform or sp. rect., but a product obtained by the distillation of chlorinated lime with rectified spirit; certainly many establishments use such a preparation.

Now if unity be divine, to what a state of spirituous degradation we have drifted by entertaining such a Babel of opinions, uses, etc., which I heartily trust does not extend to many preparations of such every-day use.

But I must not finish without suggesting some remedy for this particular abuse. On re-examination we find a majority in favour of the direct preparation; now, once allowed that chloric ether is essentially a spirit of chloroform, where is the objection to the adoption of the views held by No. 4, to the use of the officinal spirit? The only one likely to be advanced is its weakness, which, in my opinion, is its best feature; and again, should the physician require a stronger preparation, there is the compound tincture of chloroform, containing one in ten by measure. The advantages which would follow the use of the Pharmacopœia spirit for chloric ether are too evident to require enumeration, and I earnestly solicit abler hands to assist in its adoption.

BIONDINO DA FIRENZE.

LOCAL SECRETARIES—THEIR DUTY.

Dear Sir,—I must beg leave of you to allow me to correct Mr. Edward Smith's statement in reference to the appointment and duties of the local secretaries of the Pharmaceutical Society. I observe in his paper read at the meeting of the British Pharmaceutical Conference "held this year at Exeter," on "Pharmaceutical Responsibility and Remuneration," and published by you in last month's Journal, he insinuates the "Pharmaceutical Society" are not sufficiently careful in appointing their local secretaries.

Now if Mr. Edward Smith will consider for one moment, he will see he has fallen into an error. The Society have nothing to do with appointing local secretaries, the appointment is in the hands of the Pharmaceutical chemists of every town containing not less than three members of the Pharmaceutical Society, and every year the secretaries have to be re-elected by ballot; voting papers are sent to every member of the Society, and by them delivered to the registrar at Bloomsbury Square within a given date. Mr. Smith also states the local secretaries should consider it a part of their duty to institute occasional meetings to discuss and chat over in a friendly way little business matters that are occasionally cropping up, and it is astonishing how much we may influence each other almost without knowing it, smoothing down those angular peculiarities *we all possess.*

With all due respect to Mr. Edward Smith, I beg to disagree with him in his opinion, and I think if he will refresh his memory respecting a few meetings at which he was present some short time ago, he will change his mind, for instead of smoothing down those *angular peculiarities*, very many rugged ones were discoverable, the smoothing down of which would be a work of time. Why the local secretaries should be the persons selected to hear all complaints consisting of little trade jealousies which do arise and will continue to do so, I am at a loss to conceive. What I understand to be the duty of the local secretary is this:—To protect the interests of the Pharmaceutical Society, to see they are not infringed upon, to give notice to the chemists of his town of anything having occurred likely to affect their interests, of which he is duly advised by the secretary of the Pharmaceutical Society.

Yours faithfully,
FRED C. MOSS MILLAR,
Torquay. *Hon. Local Sec.*

"THE SALE OF POISONS ACT."

Sir,—Kindly grant me space to exemplify a risk to which retail chemists are exposed under this Act. One of my regular customers purchased of me this day some paregoric elixir mixed with syrup of squills, the bottle brought for which had on it my label for the article first-named, but without the word Poison; from which I concluded that the quantity last had in it was obtained prior to the passing of this Act; I therefore explained the necessity for me to label the same *Poison*. Whereupon my customer stated that she knew quite well about the "new law," and that I had twice before labelled it *poison*, but that, because she thought it nonsense and likely to make those who used it unnecessarily timid, she had each time washed off the ugly word *poison*.

Now, Sir, supposing mischief to have resulted from the use of the said paregoric, should I have been believed when I said that I invariably labelled it poison, or how could I have proved it in that particular case? The label was one of Bird's patent circular with the word *poison* together with the famed death's head and cross-bones very prominent.

I think this case proves the superiority of a label with both the name of the article and the word *poison* on it, over a separate label with the word *poison* only; as also the importance (if a separate slip "poison" be used) of sticking it on the bottle *first*, and then making it as secure as possible by the over-wrapping of the second label; but this latter plan would not prevent the word *poison* being readily removed by scraping or other methods.

I am, Sir, yours truly,
G. W. T. ARROWSMITH.
Reading, August 23rd, 1869.

MODIFIED EXAMINATION CERTIFICATE.

Dear Sir,—Having recently passed the Modified examination of the Pharmaceutical Society, I was greatly surprised to receive from the Secretary a shabby morsel of printed matter in the form of a receipt for my fee. Now, I had hoped to have had a more substantial relic to admire for all the efforts I have for months been making to pass. At the least, I expected to have a certificate as a chemist fit for framing, somewhat after the Members' Certificate of the Society. I am sure it would give no little pleasure to those who have to pass, and have passed, to know they would have a decent-looking certificate to hang up for their friends to admire, instead of the now unutterably mean production which is the only reward of their efforts. Even if a charge of 5s. or 10s. was made for it, no one would grumble. Certainly not—

Your obedient servant,
A MODIFIED MAN.
Manchester, Oct. 21st, 1868.

[We advise our correspondent to make a further effort and pass the regular examination, when he will be able to gratify his ambition.]

PREVENTION OF ACCIDENTAL POISONING.

Sir,—In the last month's Journal is an account of a paper on the "Prevention of Accidental Poisoning," by Mr. Burrell, in which he suggests the enveloping of the bottles containing the active poisons in wooden or cardboard cases. This, in my opinion, would be a very doubtful advantage, as it would shut out one means of detection. His suggestion of marking the maximum dose on each bottle is not a bad one, but the limited means suggested give little security against accidents.

If all the active medicines be placed in a cupboard either enveloped in cardboard or naked, with the dose marked on each, and with labels different from all the other labels in the pharmacy, would there not be danger in the cupboard? With strychnine and its congeners in power, morphine and its congeners, and emetic tartar and its congeners together, would it not be quite as possible for the dispenser to take one of the strong alkaloids instead of emetic tartar, or a morphia salt, as to take strychnine instead of James's powder or nitrate of bismuth, in the open pharmacy? And if such a mistake were to be made, can there be any doubt as to the result, especially if a full dose were prescribed? Then there have been fatal accidents caused by substances of which such partial means take no cognizance, and are, with such an arrangement, as likely to occur again.

The same objections apply equally to the other limited means which have been advocated from time to time. What we require is some plan which will give as much security against poisoning with saltpetre, compound powder of chalk with opium, etc., as against poisoning with the strongest poisons, and this can be attained by treating the whole pharmacy as a poison-cupboard, dividing the substances poselogically from the strongest to the weakest. This plan I suggested in the November Journal, 1866, and my excuse for again intruding on your space is that I think it would give as great security as could be gained by arrangement, and because I think it practicable.

Yours truly,
W. King.

4, Market Place, Huddersfield,
October 18, 1869.

Responsibility and Remuneration.

Sir,—At the Pharmaceutical Conference held at Exeter in August last, an able paper on "Pharmaceutical Responsibility and Remuneration" was read by Mr. E. Smith, of Torquay.

I wonder what Mr. Smith, and those who took part in the discussion which followed the reading of the paper, would say to the *remuneration* obtained for dispensing the following prescription:—

R Pulv. Scammonii Comp. gr. xij.
Hydrargyri Subchlor. gr. iij.
Misce. Ft. Pulveres 3.

Such prescription was brought to me on the 15th instant, bearing the stamp of two chemists in this city. After dispensing it, I charged 6*d*., when I was astonished by being assured that 4*d*. was the price charged by the chemists who had previously dispensed it.

Now, Sir, the pharmaceutists who considered 4*d*. sufficient remuneration (?) for their responsibility in the above case, were not, as some of your readers would at once conclude, young beginners; they are well-established pharmaceutical chemists occupying a position *here* similar to the "great historic houses in London, who, according to Mr. Smith, "will always be able to obtain any price they think fit to ask."

I am, Sir, yours obediently,
Chemicus.

Gloucester, October, 1869.

Sir,—A great deal having lately been written and said about retail prices, I am induced to bring before your notice the following circumstance.

A prescription, copy of which I enclose, viz.:—

R Acidi Nitrici dil. ʒi.
„ Hydrochl. dil. ʒiss.
Tinct. Chiretta.
„ Calumb. āā ℥iss.
„ Lupulinæ, ʒi.
Liquor. Taraxaci, ad ʒvj.

M. One teaspoonful in a little water three times a day before meals.

—was brought to me to dispense, this was done, and on naming my charge, I was told it was greatly in excess of previous charges, and had been compounded by some eminent West-end houses, and also in the country. I refused to take less, stating it was an expensive mixture, containing forty-eight doses, and for pure and best drugs it was only a just and fair price.

I then acted on the advice of our ex-President of the Pharmaceutical Conference, and wrote to some of the leading West-end houses and others, and I may mention the names of Bell and Co., Godfrey and Cooke, Savory and Moore,—and Allen and Hanbury, in the City; to these gentlemen I am much obliged for their kind and courteous replies; and with the exception of one, whose price was a little higher, all had named the SAME SUM I charged, viz. 4*s*. 6*d*. I may mention, I did not in my letter to any one state the price I had charged, and which was said to be so excessive.

This fact will serve to show that it is not the high-class chemists in London, of long esteemed reputation, the country chemists have to fear, but only the petty competitions among themselves.

Yours truly,
A Country Member.

The Grievance of Apprentices.

Gentlemen,—Will you allow me a small space in your valuable journal to say a few words on what I call the grievance of apprentices?

First, I must explain what I call this grievance; it is that there was not some provision made for apprentices who, like myself, when entering the business, had no knowledge whatever that these examinations would have to be gone through. I had been in the business three years when the Act came into force, and think it very hard that I and many more that I know should have to pass all three examinations, which, when we made up our minds to learn the trade, we had no idea we should be required to pass.

Had I known that it would have been compulsory for me to pass these when I first entered the trade, I should have spent my time during the first three years of my apprenticeship rather differently than I have.

Is it now too late to amend this? Surely it ought not to be. The Council, I think, ought to provide less stringent means for those who, when entering the business, were not aware that they would have to pass any examination previous to going into business. I can't see it at all fair myself, and I am sure there are plenty of my opinion, and I fear it will drive many from the trade after wasting some years of their time.

I trust my meaning will not be mistaken. I don't find fault with the Act, but I do think the compulsory examinations are unjust to those who, like myself, entered and were in the trade three years before knowing that the examinations would be required. I think some leniency should have been shown us. Probably this will bring expressions of a similar kind from other towns by those who have the same ideas concerning it as I have.

I am, yours respectfully,
F. C. S.

Norwich, October 18th, 1869.

"*Ponderatis*" (Leicester).—The applicant must have attained the age of twenty-one years. Apply by letter to the Registrar, giving full particulars.

"*Cinchona*" (Northampton).—(1.) The directions of the 'British Pharmacopœia' are to strain while hot, not *filter*. (2.) The substitution of a proportionate quantity of the fluid extract of bark for the bark itself would not be justifiable.

"*Beta*" (Ampthill).—The salt in question is not included in the schedule.

A. P. S. (Liverpool).—(1.) Liquor Calcis Saccharatus is liable to deteriorate by long keeping, and is therefore better freshly prepared. (2.) On ordinary days visitors are admitted to the Royal Botanic Society's Gardens by an order from a member, and not by payment.

W.—The Act applies to any product of petroleum, provided it gives off inflammable vapour at less than 100° Fahr.

J. C. (Windsor).—The Minor Examination is necessary in the case referred to.

"*Harry Stanley*" (Bristol).—(1.) We have no knowledge of the composition of the article. (2.) In the label sent for inspection the words "prepared only by," render the preparation liable to stamp duty.

"*Student*" (Hammersmith).—Electroplating. *Gold Solution:* 1 oz. troy of fine gold is dissolved in nitro-muriatic acid, and the solution evaporated until it assumes a deep red colour, and crystallizes on cooling. Dilute with one pint of pure water, and filter. Heat this solution to about 200° Fahr., and precipitate the gold by ammonia: wash the precipitate with hot water. Dissolve this gold in one gallon of water containing 8 oz. of hyposulphite of soda, and boil together for one hour; when filtered, this solution is fit for use. In gilding, this solution must be warmed to about 130° Fahr. A small anode of gold, of about one-tenth the size of the article to be gilded, and a current of two pairs of common galvanic plates, are used.

"*Persian Bouquet*" (Boston).—Oliver's 'Lessons on Elementary Botany' (Macmillan & Co.) will afford the information required.

"*A Correspondent*" (Hastings), with reference to the subject of "uniformity of prices," states that laudanum is sold by a druggist in his town at 4*d.* per ounce, and queries whether, at the price of opium, it can legitimately be sold at such a price, unless done on the principle adopted by some grocers, of selling one article for less than it costs, for the purpose of obtaining custom for other goods.

"*A Member*" (Leamington).—We have no experience of the use internally, of the ethereal extract of mezereon, B. P. The bark itself has been given in doses of 10 grains; this would probably be equivalent to about one-sixth of a grain of the extract.

S. D.—We do not think there would be any advantage in distilling the mixture, nor can we suggest any other means of accomplishing the desired object.

"*Junior A.*"—It is not correct to dispense and send out a mixture containing a salt undissolved, unless the liquid prescribed is insufficient for the solution of the salt.

"*Pyro.*"—We know of no work on the subject. Our correspondent wishes to know the best way of growing mushrooms from what is called "spawn."

W. G. (Islington).—(1.) *Pepsine* is prepared from the rennets either of the calf, sheep, or pig, taken from the animal as soon as killed. These are washed under a thin stream of water. The internal membranes are then carefully scraped off, and macerated in water for two hours at a temperature of 15° C., and then strained through a coarse cloth. The pepsine in the solution is then precipitated by acetate of lead, allowed to settle, and the supernatant liquid poured off; a current of sulphuretted hydrogen is passed through the semi-liquid deposit, which precipitates the lead in the form of sulphide. The pure pepsine remains in solution, which is then filtered, and evaporated to dryness at a uniform temperature of 45° C. (2.) The appearance of the preparation referred to is that of a dark-brown liquid, with a reddish-brown precipitate.

CORRECTION.—We regret that an error occurred in our notice of the entertainment given by the chemists of Torquay. The name of the chairman of the dinner should have been given as Mr. J. B. Guyer.

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THE ALLEGED INSUFFICIENCY OF THE PHARMACY ACT OF 1868 TO RESTRICT THE SALE OF POISONS.

Five short years ago there were not wanting men—and they are not all extinct yet—who held that a Poison Bill only served to educate criminals. Thoughtful minds reverted to the atrocious deeds of the infamous Palmer, and it was broadly stated that the notoriety of his crimes, albeit discovered at last and visited with condign punishment, served more as an encouraging than a deterrent example to like-minded men. Prior to his day, the poisons used for criminal purposes might be called clumsy, as to the mode of administration, and unsafe, inasmuch as they were easy of detection after the death of the victims; it remained for Palmer, by applying his professional knowledge of the more subtle and active agents recently discovered, to found a new system of poisoning in England. All who remember the vast amount of labour and scientific skill required to prove that Cooke died from the effects of strychnine, remembering, also, how greedily the evidence adduced on the trial was read from end to end of the kingdom, must admit that its perusal was calculated to instruct men in the art of poisoning. That it did so instruct, and perhaps create criminals, there can be little doubt; for it has been a rare thing since to hear of arsenic being employed for homicidal purposes.

We have reason to believe that notions of this kind actuated the Council of the Pharmaceutical Society in resisting from time to time all Poison Bills which were introduced to Parliament. Their answer was, "Compel the education of chemists and druggists; restrict to them the sale and dispensing of poisons, and you will establish the greatest safeguard to be found in the matter." Naturally it was felt that every man who knew the danger of his drugs, and appreciated the trust reposed in him, would feel the moral responsibility resting on him.

Accordingly, until qualification of the vendor was taken as the basis of legislation in the matter of selling poisons, the Pharmaceutical Society stood aloof, or rather were hostile to the imposition of restrictions as to the manner of selling. Qualification of the vendors was taken as a basis in the Act of 1868, and therefore the Society proposed some rules, and assented to others, to be observed by them. The question was no easy one. Men engaged from day to day in selling and compounding drugs knew the difficulty of hedging certain poisons in with barriers likely to be overleaped; they knew also the strong respect for "free trade" which had grown up in England, and therefore, while urgent in denouncing the danger of the old unrestricted sale of poisons, had to appear in the anomalous position of checks to the "hard and fast" legislation which some men high in authority advocated.

But these five years have made a marvellous difference in feeling on the poison question, and a cry for restriction is heard on all sides. It is not, we believe, that the love of "free trade" is less, but it is that the value set on human life is greater; and when we read in those statistical reports which appear from time to time that so many preventable deaths have occurred, so many persons have died from intentional, and so many from accidental poisoning, we cannot wonder at the desire to lessen those numbers; and on approaching the end of the first year's experience of the working of an Act passed to promote that object, it is well to review the criticisms thereon which have from time to time been published; but, in doing so, the very fact that it is but the end of the *first* year must have its full weight in our consideration. In no point, perhaps, is this more necessary than in regarding the urgent representations made, not only by druggists, but also by the public press, that now, as heretofore, poison sufficient to kill a whole family may be bought without let or hindrance of unregistered persons. If we had in England a public prosecutor, for the establishment of which so great a cry is heard, this evil might be sooner abated; but as it rests mainly with the Pharmaceutical Society to enforce the provisions of Section 1, a reasonable time must be allowed to elapse before the end is attained. The fact should not be overlooked that motives of self-interest might be imputed to the Society in the too hasty prosecution of offenders. Nor can we disregard the further fact that buyers, as well as sellers, have to be taken into account, and both must, in a certain sense, be educated as to the new condition of things. We heard the other day, from one of the most active supporters of the Bill on its way through the House of Commons, that he had made it his business to look into the working of the Act; and, although there might be cases of evasion, he was satisfied much good had resulted. From personal inquiry he was convinced that in his district the sale of laudanum and other poisons had been discontinued by the hucksters; that in one of the largest chemist's establishments in the kingdom, the feeling of apprehension which had arisen among both principals and assistants at its passing, had given way to an entire approval. We pass over the absurd complaint that ordinary drugs can still be purchased of the village grocer, not because we wish to perpetuate such trading, but simply because the Act does not contemplate, and its promoters never contemplated directly, interference therewith. Another complaint, however, deserves more consideration, and this comes from the public rather than from our own body. We mean the sale of vermin-killers containing strychnine. Nobody who has watched the reports of criminal poisonings in the last few months by these compounds, can doubt that it is the duty of the Council of the Pharmaceutical Society to declare, and to obtain the approval of the Privy Council to their declaration, that *preparations* of certain poisons which are now sold indiscriminately to man, woman, or child, should be placed under restriction. This is an evil which can be remedied, and we trust the Council will not shrink from so obvious a duty.

Touching "vermin-killers," there comes, from one of the best of our weekly papers, a charge of insufficiency in the provisions of section 17, from which we entirely dissent, valuable as we deem the general opinion of so able a journal. A. B., in order to obtain strychnine, must apply to a chemist to whom he is known, or, failing his ability to do that, must take to the chemist a third person mutually known to both of them. In other words, the chemist can only sell on satisfactory evidence of the credibility of the purchaser. Signatures must be made, leaving positive evidence of the transaction, and should crime be committed, connecting the persons concerned by a most important link to that crime. Our contemporary says this is not sufficient, and should be amended by requiring the authority of a medical practitioner for the sale. If A. B. asked for strychnine to take or administer as a medicine in the ordinary domestic fashion, we think there are few chemists who would supply him without medical authority; but the case is altogether different, and resolves itself into one of character, on which point we submit a chemist may be quite as good a judge as a physician. Beyond all that, we question whether the doctor will deem it a fitting occupation to write a certificate that A. B. may kill his rats, or whether A. B. will approve of giving a guinea for such permission. Our contemporary surely cannot contemplate that the authorized—privileged, we might say—vendors of poison will deem their *moral* responsibility lessened by a mere compliance with the *legal* requirements! Out on a supposition, we say, so derogatory to our body!

Some critics have chosen to call it absurd to select just thirteen poisons for legislation, and leave a vastly larger number unfettered. We would remind them that the object was to restrict those articles most commonly used for criminal purposes, and to impose as little inconvenience as might be on the trade.

After regarding objections which have been raised on points which are seen by all, we may perhaps be allowed to say a word or two on certain evidence of success at present seen only by a few. Need we add, that we allude to the result of the enactments enforcing education? What stronger proof of their value can be given than the bare facts, that since the passing of the Pharmacy Act of 1868, nearly two thousand persons have submitted themselves successfully to the various examinations, and that in the present session about one hundred students are receiving practical instruction in the Laboratory, or attending the lectures of the Professors at Bloomsbury Square. This is evidence which will become patent to the world in due time; this is a result of the Pharmacy Act which will ultimately make it, *in truth*, "*an Act to regulate the Sale of Poisons!*"

THE MEDICINE STAMP AND LICENCE.

At the last anniversary meeting of the Pharmaceutical Society an attempt was made to bring the subject of the medicine licence under consideration, with the view of obtaining some alteration in the law, whereby the requirement for this licence should be abolished, or the annual charge for it equalized; but the subject was not then entertained, on account of the informal manner in which it was introduced. It is not improbable that the more comprehensive subject of the laws relating to the medicine stamps and licence may come before the notice of Parliament during the ensuing session, and it is therefore important that those most deeply interested and best informed with reference to the operation of these laws should be prepared to express their opinions, and to promote such a change, if any, as may appear to be most desirable.

The laws relating to medicine stamps and licences are involved in considerable obscurity; and even those who, from their official positions, may be supposed to understand them, have not always agreed in the constructions they have put upon the Acts that are in force. The questions that are constantly submitted to us by correspondents clearly show also how imperfectly the requirements of the law are comprehended by those who are daily liable to incur penalties for their infringement in the sale of medicines.

For the purpose of facilitating the discussion of this subject, and of preparing for such an expression of opinion on questions that may arise as will conduce to their satisfactory settlement, we propose briefly to explain what the existing state of the law appears to be, and to point out some alterations which have been suggested, and which may possibly be submitted in a more definite form at a subsequent period.

The law requires that on certain medicines, when sold to the public, a duty shall be paid, which shall be levied by means of a stamp, to be attached to every separate packet of such medicines. This is provided for in the 42 Geo. III., which enacts that—

> For and upon every packet, box, bottle, pot, phial, or other enclosure, containing any drugs, herbs, pills, waters, essences, tinctures, powders, or OTHER *preparation or composition* whatsoever, used or applied externally or internally as medicines or medicaments for the prevention, cure, or relief of any disorder or complaint incident to or in anywise affecting the human body, which shall be uttered or vended in Great Britain, there shall be charged a *stamp duty*, according to the rates following (that is to say), where such packet, box, bottle, pot, phial, or other enclosure as aforesaid, with its contents, shall not exceed the price or value of one shilling, there shall be charged a stamp duty of one penny halfpenny; and where above one shilling, and not above two shillings and sixpence, threepence; above two shillings and sixpence, and not above four shillings, sixpence; above four shillings and not above ten shillings, one shilling; above ten shillings and not above twenty shillings, two shillings; above twenty shillings and not above thirty shillings, three shillings; above thirty shillings and not above fifty shillings, ten shillings; and above fifty shillings there shall be paid a *stamp duty* of twenty shillings.

Some modifications in the application of this law were subsequently made, and schedules were given in which the medicines subject to the duty were enumerated; but the 52 Geo. III., in addition to a schedule, contains the following paragraph:—

> And also all *other* pills, powders, *lozenges*, tinctures, potions, cordials, electuaries, plaisters, unguents, salves, ointments, drops, lotions, oils, spirits, medicated herbs and waters, chemical and *officinal* preparations whatsoever, to be used or applied externally or internally as medicines or medicaments, for the prevention, cure, or relief of any disorder or complaint incident to, or in anywise affecting the human body, made, prepared, uttered, vended, or exposed to sale, by any person or persons whatsoever, wherein the person making, preparing, uttering, vending, or exposing to sale the same, hath or claims *to have any occult secret or art for the* making or preparing the same, or hath or claims to have, any exclusive right or title to the making or preparing the same, or which have at any time heretofore been, now are, or shall hereafter be prepared, uttered, vended, or exposed to sale, under the authority of any *letters patent* under the great seal, or which have at any time heretofore been, now are, or shall hereafter be, by any public notice or advertisement, or by any written or printed papers or hand-bills, or by any label or words written or printed, affixed to or delivered with any packet, box, bottle, phial, or other enclosure containing the same, held out or recommended to the public by the makers, venders, or proprietors thereof, as nostrums, or proprietary medicines, or as specifics, or as beneficial to the prevention, cure, or relief of any distemper, malady, ailment, disorder, or complaint incident to or in anywise affecting the human body.

The specified exemptions to the operation of this law are as follows.—

> It is provided by the fourth section, that it shall not be necessary for any victualler, confectioner, pastrycook, fruiterer, or other shopkeeper in Great Britain, who shall only sell any of the artificial or other waters *mentioned in the schedule hereunto annexed*, to be drunk in his or her house or shop, and which shall be actually drunk therein, *to take out a licence for that purpose under the provisions of the said Acts of the 42nd and 44th* years of his Majesty's reign, *provided such waters shall be sold by him or her in bottles, with paper covers, wrappers, or labels, duly stamped*, properly and sufficiently pasted, stuck, fastened, or affixed to the same in the manner hereinbefore mentioned; anything in the said Acts contained to the contrary notwithstanding.

> All drugs named or contained in the book of rates subscribed with the name of Sir Harbottle Grimstone, Baronet, and mentioned and referred to by the Act of Tonnage and Poundage made in the Twelfth Year of the Reign of King Charles the Second, and in another book of rates, intituled "An additional Book of Goods and Merchandise usually imported and not particularly rated in the Book of Rates, referred to in the Act of Tonnage and Poundage made in the Twelfth Year of the Reign of King Charles the Second, with Rules, Orders, and Regulations, signed by the Right Honourable Spencer Compton, Speaker of the Honourable House of Commons, and mentioned and referred to by an Act made in the eleventh year of the reign of his Majesty King George the First."
>
> All medicinal drugs whatsoever which shall be uttered or vended entire, without any mixture or composition with any other drug or ingredient whatsoever, by any surgeon, apothecary, chemist, or druggist, who hath served a regular apprenticeship, or by any person who hath served as a surgeon in the navy or army under any commission or appointment duly entered at the War Office or Navy Office, *or by any other person whatsoever licensed* to sell any of the medicines chargeable with a stamp duty.
>
> And *also all mixtures*, compositions or preparations *whatsoever*, mixed or compounded with, or prepared from medicinal drugs, medicated or chemical preparations or compositions or other ingredients, bearing different denominations, or having different properties, qualities, virtues, or efficacies, which shall be uttered or vended by any *such surgeon*, *apothecary*, *chemist*, *or druggist* as aforesaid, *or by* any such person who hath served as a *surgeon in the navy or army,* under any such commission or appointment as aforesaid, *the different* denominations, properties, qualities, virtues, and efficacies of which mixtures, compositions, and preparations as aforesaid, *are known*, admitted, and approved of, in the prevention, cure, or relief of any disorder, malady, ailment, or complaint incident to, or in anywise affecting the human body [and wherein the person mixing, compounding, preparing, uttering, or vending the same hath not, nor claims to have any *occult* secret or art for the mixing, compounding, or preparing the same], [nor hath, nor claims to have, any *exclusive right or title* to the mixing, compounding, or preparing, or to the vending of the same; and which mixtures, compositions, or preparations have not been, are not, nor shall hereafter be prepared, uttered, vended, or exposed to sale under the authority of any letters patent under the great seal], [nor at any time heretofore have been, now are, or shall hereafter be, by any public notice, advertisement, or by any written or printed papers or hand-bills, or by any labels or words written or printed and affixed to *or delivered with* any such packet, box, bottle, pot, phial, or other enclosure aforesaid, held out or recommended to the public by the owners, proprietors, makers, compounders, original or first venders thereof, as *nostrums or proprietary medicines, or as specifics, or as beneficial, for the prevention, cure, or relief of any such distemper, malady, ailment, or complaint as aforesaid.*

The law also requires that all persons who sell stamped medicines shall have a licence for doing so. This is provided by the Act already referred to, namely, 42 Geo. III., the sixth section of which states that—

> Every *owner*, proprietor, maker, and *compounder* of, and *every person* in Great Britain, uttering, vending, or *exposing to sale*, or keeping ready for sale any such drugs, herbs, pills, waters, essences, tinctures, powders, or OTHER *preparations or compositions* whatsoever, used or applied or to be used or applied externally or internally as medicines or medicaments, for the prevention, cure or relief of any disorder or complaint incident to or in anywise affecting the human body, or any packets, boxes, bottles, pots, phials, or other enclosures aforesaid, with any such contents as aforesaid, SUBJECT TO THE DUTIES herein *before* granted, shall annually take out a *licence;* and that for and upon every licence so taken out by any such person who shall reside within the cities of London or Westminster, the borough of Southwark, or within the limits of the twopenny post, or within the city of Edinburgh, there shall be charged a stamp duty of forty shillings; and for and upon every licence so taken out by any other such person who shall reside in any city, borough, or town corporate, or in the towns of Manchester, Birmingham, or Sheffield, there shall be charged a stamp duty of ten shillings; and for and upon every licence so taken out by any other such person residing in any other part of Great Britain, there shall be charged a stamp duty of five shillings.

It would appear that, according to the intention of the law, as indicated by the manner in which the exemptions are stated, grocers, oilmen, hucksters, and other unqualified persons, cannot legally sell medicines, either simple or compounded without taking out a licence, and cannot sell compounded medicines, such as tinctures, pills, etc., without attaching a stamp to each article.

A distinction would be thus made between persons qualified by education and persons merely authorized by licence to sell medicine. This, distinction, however, is not practically observed, although it may be inferred to have been the intention of the Legislature in framing the Acts to establish such a distinction, and this opinion was expressed by Mr. Price, of the Middle Temple, barrister-at-law, in a pamphlet published in 1830.

Mr. Price states that—

> There are, on the whole review of these Acts considered together, and with reference to their objects, and to each other, *four classes of persons* contemplated by the Legislature, and *three sorts* of things as within the scope of the medicine duty laws.
>
> The classes of persons are:—
>
> First, Those who by apprenticeship to surgeons, apothecaries, chemists and druggists (and surgeons of the navy and army), derive the qualification of skill from discipline, for engaging and practising in the sale of drugs and medical preparations.
>
> Secondly, Persons procuring the legal or statutory qualification of a licence.
>
> Thirdly, Patentees of proprietary preparations in medicine, quacks, or nostrum-makers; and
>
> Lastly, All unlicensed venders of drugs and medical compounds.
>
> The three things contemplated are:—
>
> First, Drugs, etc., entire.
>
> Secondly, Preparations and compounds of those of legitimate character; and
>
> Thirdly, Such of the latter as are of spurious or empirical character.
>
> Of the four classes of *persons* contemplated by the Acts, the first Class are exempted from all the restraining and disabling provisions, whether by clause or schedule, except that of the impost of *duties* on the third sort of things, which are the subject-matter of the statutes, if *sold* by them.
>
> The second class of *persons* contemplated are rendered capable of vending the *first* class of things without payment of other duty than that imposed on the necessary licence; and are authorized to sell the second sort of things, on payment *by them beforehand*, of the duties imposed on *their* sale by the law; and also to sell the third sort of things received from the owners or compounders, when stamped, as having paid the duty.
>
> The third class of persons consists of all *original venders*, makers, or proprietors of patent medicines (as they are termed), and empirical nostrums, whether patent or not; in other words, proprietors, makers, and *first venders* of the third sort of things above enumerated.

We have endeavoured, not only now, but also on former occasions, to put this view of the subject before our readers upon the authority stated, but it may be doubted whether such an interpretation of the law as is here given would be considered sound, and certainly it has not been acted upon as such. That there are ambiguities in the wording of the Acts, however, is obvious, and we believe that difficulties are often experienced by those who have to carry the law into effect in deciding upon its right interpretation. This is one of the grounds upon which an alteration of the law may probably be proposed, and the object contemplated would be either to simplify and render intelligible what is now complicated and obscure, or possibly to do away with existing regulations altogether. Several suggestions have been made, which are as follows:—

1. That, instead of the three different charges now made for medicine licences, there should be one uniform charge of ten shillings.

2. That, in addition to the equalization of the charge for licences, they should be granted only to Registered Chemists and Druggists.

3. That the licence should be abolished, and stamped medicines sold subject only to such regulations as the law imposes upon the sale of other medicines.

4. That, in connection with the last-named arrangement, some increase should be made in the values of the stamps attached to stamped medicines.

5. That the stamping of medicines and the granting of licences for their sale should be altogether abolished.

In dealing with this subject, the Government would probably view it simply as a question of finance. A certain amount of revenue is derived from the two sources of medicine licences and stamps. We believe the amount derived from the former of these sources is about £6000, and from the latter about £60,000. The number of persons licensed is about 12,000, and therefore an equalization of the charge for licences, at ten shillings each, would leave the revenue in this respect unaffected. From the above amounts, however, the cost of collection has to be deducted; and when, in addition to this, it is considered that in carrying the law into effect difficulties and annoyance frequently arise from misunderstanding of the requirements of the law, it is not improbable that the Chancellor of the Exchequer might be induced to abolish the whole system of stamping medicines and licensing their sale.

But there are other considerations, besides those of a financial character, which we as pharmaceutists will naturally take account of. We have to consider the bearing of the existing regulations, and the probable effect of any change that might be made, on the interests of our brethren in different parts of the country, and especially on the interests of pharmacy, and of the practice of medicine generally. It is with reference to the influence that might be exerted in these respects that it seems desirable to elicit the opinions of those of our members who are able to assist in devising the best course to be adopted for bringing this subject to a satisfactory settlement.

RENEWAL OF THE PATENT MEDICINE LICENCE.

In connection with the preceding article, it may be well to remind our readers that the medicine licence has not yet been abolished; that those who sell stamped medicines, if they do so without having a licence, are liable to a penalty of £20, and that the licence has to be renewed every year. The payment comes due on the 1st of September, but a month's grace is allowed by the authorities at Somerset House. If the licence be not renewed within that time, and the sale of stamped medicines be continued, the penalty will be incurred, and a repetition of circumstances similar to those recently described by Mr. Farmer, of Putney, may have to be recorded.

THE ATOMIC THEORY.

A most important discussion has recently taken place at the Meetings of the Chemical Society, on the subject of the atomic theory. At the present time, when our notions of molecular constitution are undergoing so much development, an inquiry into the evidence supporting the atomic theory is particularly opportune. The lecture which was delivered by Professor Williamson at the Society's rooms in July, contained an elaborate and masterly analysis of the reasoning upon which this theory rests. It would be impossible by an abstract to convey a just impression of this discourse, which is nevertheless too lengthy for publication in our pages. But it is printed in full in the 'Chemical Society's Journal,' and is, we believe, also obtainable in a separate form. Dr. Williamson contends that, on the one hand, all chemists use the atomic theory, and that, on the other hand, a considerable number of them view it with mistrust, some with positive dislike. The justice of this proposition was shown in the debate which took place at the meeting last month. Several of the speakers, including some of our most eminent chemists, displayed a manifest unwillingness to accept the atomic doctrine unreservedly. Few, if any, were disposed to admit the finite divisibility of matter as an absolute truth.

The complete applicability of the atomic theory to the explanation of chemical phenomena cannot be denied. Some general principle or hypothesis which shall connect together and explain to the mind a large set of observed facts is almost absolutely necessary. That each element moves through its compounds in one certain fixed quantity or proportion may be admitted as an established fact. Whether this is due to the movement of an atom physically incapable of further or indefinite division cannot be determined. But as long as such a notion is competent to explain the facts within our knowledge and help us to the discovery of new ones, it will continue in use by chemists. When some other view of the ultimate nature of matter is propounded which shall effect this purpose better, the atomic theory will fall.

Such are the conclusions we gather from a debate which will do much to induce more correct thought upon this subject.

THE NEW CHAIR OF TECHNICAL CHEMISTRY.

In our July number we referred to the munificent offer of the sum of £10,000 by Mr. James Young, for the endowment of a Chair of Technical Chemistry in the Andersonian University of Glasgow. We learn, however, that some difficulties have arisen in the way of accepting Mr. Young's generous proposal. The present lecturer on chemistry in the Institution has appealed against the appointment of an additional professor as prejudicial to his interests. Dr. Penney's system of teaching has always included the applications of chemistry to the arts, and the existence of a special course on this subject in the same university would, no doubt, interfere with the numbers attending his class. The infliction of injury on a highly respected teacher ought, if possible, to be avoided.

It is now rumoured that the fund will be applied to the establishment of an independent school of chemistry in Glasgow. Should this be the case, we sincerely hope that no further obstacles may occur. Science has few such friends as Mr. Young, and cannot afford to lose or discourage them. It is generally understood that the professorship will be accepted by Mr. W. H. Perkin, F.R.S., the talented discoverer of mauve dye, and originator of the great industry in coal-tar colours. Mr. Perkin, not only stands at the head of a new and important manufacture, but has also attained a high reputation for his original researches in purely scientific chemistry. A more fortunate and judicious appointment could not be made.

Since writing the above, we observe with regret an announcement in the daily papers of the unexpected death of Dr. Penney.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *November 3rd*, 1869,

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

Present—Messrs. Abraham, Bottle, Bourdas, Carteighe, Edwards, Haselden, Hills, Ince, Mackay, Morson, Randall, Sandford, Savage, Stoddart, and Williams.

The minutes of the previous meeting were read and confirmed.

The President reported that he had conveyed the thanks of this Society to the Pharmaceutical Society of Austria, as expressed in resolution of the Council, and that he had received the following reply from the Secretary:—

"*Himmelpfortgasse* 17, *Vienna*, *October* 25, 1869.

"President H. Sugden Evans, London.

"Dearest and honoured Sir,—Excuse, please, my late answer to your kind letter of October 8; but I assure you I had so much to do that I was not able to answer earlier. First of all I must tell you, dear Sir, that your letter gave me great pleasure, and, fortunately, it happened that we had our Society's Council meeting the same day that your letter arrived, which I laid, with the enclosed copy, and your too flattering description of the Congress, before the Members of our Council. All the members present *were very much pleased* to hear that the Council of your highly esteemed Association unanimously expressed the wish *that a Pharmaceutical Congress should be held at an early future date in London*. Loud cheers were given in answer to this cordial proposition, so that I am convinced, an invitation being supposed, Austrian chemists will certainly appear, and with great pleasure at a future Pharmaceutical Congress in London. I then proposed, at the same meeting, that our Society's best thanks for this graceful courtesy should be expressed to the Council of your Society. The motion was adopted unanimously, and I have the honour to be the interpreter of our feelings. I proposed also that our President, Mr. Beckert, should enter into correspondence with the four other Presidents forming the Committee for arranging the fourth Pharmaceutical Congress,—Messrs. Robinet (Paris), Von Trapp (St. Petersburg), Danckwortt (Magdeburg), and Wolfrum (Augsburg),—to invite you, dear Sir, as the President of the greatest Pharmaceutical Society in Europe, to kindly take part in that Committee. Director Beckert and the whole Council were unanimously for this motion, and I hope you will be good enough to accept such an invitation; on the other hand, there cannot be any objection to it from the remaining four Presidents. It will take some time before the invitation can reach you, because the distance between the five Presidents is great. At the same Meeting, propositions were made for the election of honorary and corresponding members of our Society. Both you and Professor Redwood will please accept, at an early future period, the diplomas of honorary members as a sign of the great esteem we all feel for you both. Please to present to Professor Redwood, especially, my best compliments.

And now, dear Sir, accept my wife's and my own best compliments. Excuse me for the delay of my answer, and believe me,

"Yours very truly affectionate,
"ANTHONY WALDHEIM,
"Pharmaceutical Chemist and Secretary of the Austrian
"Pharmaceutical Society."

The Report of the Finance and House Committee was presented, showing on the General Fund Account a balance in the Treasurer's hands of £955. 8*s*. 6*d*., and submitting for payment accounts and various items amounting to £408. 16*s*. 10*d*., and on the Benevolent Fund Account a balance of £456. 6*s*. 4*d*.

Resolved—That the report be received and adopted, and payments made.

On the recommendation of the Finance and House Committee, it was

Resolved—I. That the estimate of Messrs. Butler and Tanner, Frome, for printing the Register of Chemists and Druggists for the year 1870 be accepted.

II. That a portico facing Bloomsbury Square, in accordance with the plans and specifications submitted, be erected.

III. That a hall-doorkeeper be provided, and that a Commissionaire be in the first instance engaged.

Resolved—That the sum usually received from each of the Jacob Bell Scholars, for the use of materials for the Session, be not taken in future.

A letter from Professor Attfield was read in reference to additional Laboratory accommodation. He stated that fifty-one benches were at present occupied, and that others were engaged. The consideration of the subject was referred to the Library, Museum, and Laboratory Committee.

It was moved by Mr. Sandford, seconded by Mr. Abraham, and

Resolved—That the Secretary be instructed to advertise for a Collector to undertake the duties performed by the late Mr. Calverley.

The Report and proceedings of the Library, Museum, and Laboratory Committee, having been read, were received and adopted.

The Memorandum of Regulations under Sect. 2 of the Pharmacy Act, 1868, submitted to the Privy Council some time since, was brought forward, its provisions discussed, and the further consideration thereof postponed to the next meeting of this Council.

On the report and recommendation of the Parliamentary Committee, and after due consideration, the Council ordered the names of James Brocklehurst Coare and Charles Miller Foottit, now on the Register of Chemists and Druggists, to be erased therefrom.

The following, being duly registered as Pharmaceutical Chemists, were severally granted a Diploma, stamped with the seal of the Society:—

Candy, John William Gilbert, Bath.
Colchester, William Markham, London.
Machin, Frederick John, Sheffield.
Rowell, Robert Henry, Newcastle.
Tansley, Isaiah, Lowestoft.

The following Pharmaceutical Chemists were elected—

MEMBERS.

Burt, James, Worthing.
Coles, John Wm., Camberwell New Road.
Hallawell, Joseph, Pendleton.
Serpell, Samuel, Truro.

Resolved—That Thomas B. Howson, of Eynsham, having paid his arrears and subscription for the current year, be restored to Membership.

The following Chemists and Druggists, registered under the "Pharmacy Act, 1868," were elected—

MEMBERS.

Downes, Robert, Orange, N. S. Wales.
Lakeman, Nicholas, Modbury.
Pollard, Henry Hindes, Ryde, I. of Wight.
Reboul, Anthony Percy, 60, Liverpool Road, Islington.
Roper, Thomas, Ross.
Shaw, Edward Pearson, Wakefield.
Smith, Thomas William, Diss.
Tremearne, Anthony King Newman, 14, North Pier, London Docks.
Williams, David Pierce, Llanberis.

The following were elected—

ASSOCIATES.

Drury, Sydney, Canterbury.
Twemlow, Richard, Manchester.
Jelley, Richard, Elton.

BENEVOLENT FUND.

Mary Gilkes, widow of the late William Gilkes, of Leominster, and Martha Jane Farrow, widow of the late William Farrow, of Woburn, who had at the late election obtained the largest number of votes, were declared Elected Annuitants, and the Treasurer was requested to pay them their annuities to Christmas next.

A sum of Ten Pounds was voted for the use and benefit of a distressed Registered Chemist and Druggist, age seventy-one.

BENEVOLENT FUND.

ELECTION OF ANNUITANTS.

MR. BOURDAS IN THE CHAIR.

A meeting was held at the House of the Society, on Friday, the 29th of October, pursuant to notice, for the Election of Two Annuitants on this Fund, each to receive Thirty Pounds per annum.

Six applicants had been placed by the Council on the list of Candidates approved for Election.

The Scrutineers, appointed from the voters present, having examined the votes, reported as follows:—

We, the undersigned Scrutineers appointed at the fifth election of Annuitants on the Benevolent Fund of the Pharmaceutical Society of Great Britain, do hereby certify, that we have examined the voting-papers committed to us, and report the following result:—

Mary Gilkes, Leominster		2162
Martha Jane Farrow, Woburn	(766 brought from last election)	1594
Charles Thomas Anderson, Jersey	(135 " ")	787
John Watkins, London	(337 " ")	768
Hannah Greaves, Rawtenstal	(315 " ")	789
Sarah Wilson, Kendal		91
Informal Votes		13

M. Carteighe.
Charles Fryer.
J. S. Ward.
John Williams.
Matthew Pound.
} *Scrutineers.*

October 29, 1869.

The Secretary announced that Mr. Franks, of Ramsgate, had sent the sum of 20*s*. to be divided amongst the four unsuccessful Candidates.

Thanks were given to the Scrutineers and to the Chairman.

The votes polled for unsuccessful Candidates may be carried forward for four successive Elections.

EXAMINATIONS IN LONDON.

October 20*th*, 1869.

FIRST, OR PRELIMINARY EXAMINATION.

The certificates of the following persons examined in the Provinces previous to the adoption of Simultaneous Examinations were submitted and approved, and the several persons duly registered as

APPRENTICES OR STUDENTS.

Barber, William, Shefford.
Barker, Charles Dexter, Birmingham.
Bluett, Reginald, Tetbury.
Bradford, Cordley, Spalding.
Caswell, Harry Wilson, Stroud.
Francis, William, Carmarthen.
Hannaford, William, Peterborough.
Higgatt, William, Lincoln.
Hodges, Edwin Goodall, Bristol.
Hopper, John Christopher, Doncaster.
Jarvis, Abraham, Kingsbridge.
Jenkins, Evan Edward, New Radford.
Kirton, Christopher Henry, Hull.
Mainwaring, Francis, Aberdare.
Maxey, William Henry, Boston.
Mills, Richard Powell, Weston-super-Mare.
Mills, Thomas William, Birmingham.
Parkes, Edward Moulton, Birmingham.
Partridge, Samuel, Dudley.
Pearson, Walter, Hull.
Pullen, Robert, Hull.
Radclyffe, Frederick C. P., Birmingham.
Wainwright, Thomas, Hull.
Waters, Frederick, Gainsborough.
Watson, James, Morpeth.
Wilson, Richard, Hull.

October **27*th*, 1869.**

Present—Messrs. Bird, Carteighe, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, and Haselden.

Twenty-one Candidates presented themselves; the following nineteen passed, and were duly registered as

PHARMACEUTICAL CHEMISTS.

Barclay, Thomas, Birmingham.
Barnaby, Francis, Manchester.
Bartholomew, William, Egham.
Brown, Edward, London.
Burt, James, Worthing.
Bushby, Thomas, Ardwick.
Goodson, Jabez, Alton.
Gostling, John Henry, Halesworth.
Harvey, William Brett, Frome.
Hathaway, Frederick Henry, Lydney.
Hill, John, Neath.
Hugo, John Edmund, London.
Hunter, John, Faversham.
Johnson, Thomas Simister, Manchester.
Mabbett, George Drew, Colnbrook.
Mumbray, Hy. George, Higher Broughton.
Pears, Kilby, Brighton.
Southall, Alfred, Birmingham.
Williams, George Henry, London.

November 5*th*, 1869.

Present—Messrs. Bird, Carteighe, Darby, Davenport, Deane, Edwards, Gale, Garle, and Haselden.

Nineteen Candidates presented themselves; the following thirteen passed, and were duly registered as

PHARMACEUTICAL CHEMISTS.

Balkwill, George, Plymouth.
Cheetham, William Henry, Brixton.
Cole, Alfred Cooper, Lee.
Gratte, Henry Joshua, Newport, Mon.
Lee, Edward T., Rhyl.
Lord, Thomas, London.
Marsden, Thomas Bingley, Manchester.
Merrikin, John Bilby, Bath.
North, George T., London.
Phillips, William Tye, Lower Norwood.
Robinson, Alfred Francis, Darlington.
Sadleir, John, Gloucester.
Sumners, Michael Cole, Heckington.

November 17*th*, 1869.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Garle, Haselden, and Southall.

Fourteen candidates presented themselves; the following ten passed, and were duly registered—

MAJOR (as Pharmaceutical Chemists).

*Warrior, Charles, Northallerton.
Smith, Walter Henry, London.
Ward, John Slinger, Stockton-on-Tees.
Brady, Alfred, Newcastle-on-Tyne.
Spear, Robert, London.

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* Passed with honours; eligible at the end of the Session to compete for the Pereira Medal.

MINOR (as Chemists and Druggists).

†Sharpe, Leonard George, London.
Taylor, John James Salmon, London.
Jones, Rees Thomas, London.
Lyon, James, Ipswich.
Cotterill, Samuel, Southampton.

EXAMINATION IN EDINBURGH.

November 9th, 1869.

Present—Messrs. Ainslie, Aitken, Brown, Buchanan, Kemp, Mackay, and Young. Dr. Christison was also present, on behalf of the Privy Council.

One Candidate presented himself for the Minor Examination, but failed to pass the same.

MODIFIED EXAMINATION.

Eleven Candidates were examined; the following nine passed, and were registered as

CHEMISTS AND DRUGGISTS.

Anderson, George L., St. Leonard's-on-Sea.
Hill, Alexander Scott, Glasgow.
M'Clelland, William, Glasgow.
Nichol, Robert Gordon, Bristol.
Smith, William, Edinburgh.
Staley, John, Rochdale.
Taylor, Nathan, Carlisle.
Trinder, Joseph, Newcastle-on-Tyne.
Wetherell, Henry Frank, London.

FIRST, OR PRELIMINARY EXAMINATION.

The following passed their Examination, and were registered as

APPRENTICES OR STUDENTS.

Anderson, Alexander, Elgin.
Delamer, Edward, Musselburgh.
Elder, William Nicol, Wick.
Henderson, Andrew, Perth.
Miller, Kenneth, Wick.
Pearson, Leonard, Hexham.
Spooner, Frank, Edinburgh.
Turner, John, Hexham.

PHARMACEUTICAL MEETING.

November 3rd, 1869.

H. SUGDEN EVANS, ESQ., PRESIDENT, IN THE CHAIR.

The Minutes of the previous Meeting having been read, the following

DONATIONS TO THE LIBRARY AND MUSEUM

were announced, and the thanks of the Meeting given to the respective donors thereof:—

The Durham University Calendar: from the University,—The Calendar of the Royal College of Surgeons of England: from the College,—University College, London, Calendar: from the College,—Journal of the Linnean Society: from the Society,—Nomenclature of Diseases: from the Registrar-General for England,—Plenck's Icones Plantarum Medicinalium, Vols. i.-iv., and Richard's Histoire Naturelle Médicale, 2 vols.: from Mr. D. Hanbury,—The Popular Encyclopædia, 7 vols.: from Mr. J. S. Jarvis,—Memoirs and Proceedings of the Literary and Philosophical Society of Manchester: from the Society,—Priestley on Air, 3 vols.: from Mr. F. Coles,—Culpeper's English Physician, and Complete Herbal: from Mr. E. Rainey,—Annual Report of the Smithsonian Institution, 1867: from the Institution,—Report on Excisions of the Head of the Femur for Gunshot Injury: from the Surgeon-General, U.S.A.,—Chemistry; Medical, General, and Pharmaceutical: from Professor Attfield,—On Chronic Bronchitis, especially as connected with Gout, Emphysema, and Diseases of the Heart: from Dr. E. Headlam Greenhow,—Cataract and its Treatment: from Mr. Jabez Hogg,—A Chemist's View of

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† Passed with honours; eligible at the end of the Session to compete for the Prize of Books.

the Sewage Question: from Mr. E. C. C. Stanford,—The Supply of Animal Food to Britain: from Mr. W. L. Scott,—Specimens of the Barks of *Holarrhena antidysenterica* and *Alstonia scholaris*: presented by Dr. Forbes Watson,—Specimens of the Bark of the Messana Tree (*Albizzia anthelmintica*, Brong.), an Abyssinian tænifuge; also a specimen of Square Chinese Isinglass: Presented by Dr. Aquilla Smith,—Specimens of Rhizome and Leaves of *Sarracenia purpurea*: presented by Mr. F. H. Peck,—Specimens of *Caliche*, or Chili Nitre (Crude Nitrate of Sodium): presented by Professor Attfield,—Two Seeds of *Lucuma mammosa*: presented by Mr. Morson,—A very fine living specimen of *Ricinus communis*, grown at Shepherd's Bush: presented by Mr. A. Bird,—A very large specimen of English-grown Rhubarb: presented by Mr. P. Squire,—Stems and Roots of *Cissampelos Pareira*, collected in Jamaica: presented by Messrs. Allen and Hanbury,—Gum of *Sterculia Tragacantha*, from West Coast of Africa. Described in the 'Pharmaceutical Journal' by Dr. Flückiger: presented by Mr. D. Hanbury.

The following papers were read:—

HISTORICAL NOTES ON MANNA.

BY DANIEL HANBURY, F.R.S.

Whatever was the true nature of the substance provided for the sustenance of the ancient Israelites and termed by them *Manna*, that name has in subsequent ages been used to designate certain saccharine exudations produced in hot countries upon the stems, branches or leaves of trees, shrubs, or herbaceous plants, belonging to various families. Thus in the peninsula of Sinai, a sweet substance called *manna* is exuded by a species of tamarisk; in Persia, a manna is produced by a small, thorny, leguminous plant, known to botanists as *Alhagi Maurorum*; and in Kurdistan, an evergreen-oak affords an analogous product. These substances have from a remote period been employed as food or medicine, and they are still found, though in small quantities in the bazaars of the East. The Cedar of Lebanon, the Larch, a *Cistus*, and certain Australian species of *Eucalyptus* likewise yield at certain seasons, saccharine exudations in more or less abundance; and those derived from the cedar and larch have occasionally been collected for use.

The manna of modern times is well known to have a very different origin, being a product obtained in considerable abundance from the stems and branches of a species of ash, cultivated in Calabria and Sicily. With this manna, Europe is wholly supplied, and it likewise finds its way into the markets of the East.

During some conversation last summer with my friend Dr. Flückiger of Bern, he drew my attention to this curious fact,—that in the early history of Sicily, no mention is made of manna as a production of the island. This induced me to look around for further information, the result of which has been the collection of a few notes on the history of this drug, which seem of sufficient interest to be presented to the Pharmaceutical Society.

In the first place, I must thank Colonel Yule, to whom I wrote thinking that his familiarity with historical research, and actual residence at Palermo, might enable him to impart some hints for my guidance. But he has been good enough to render me still greater service in furnishing extracts from several authors whose works I might otherwise have overlooked.

With regard to manna which has fallen from the atmosphere, or as it is termed *Meteoric Manna*, the grand example is that described in the book of Exodus. Of this it may be safely affirmed, that accepting the Mosaic account as the simple narrative of a real event, no phenomenon is known which is at all adequate to explain it.

But there are other examples of meteoric manna which come fairly within the range of natural phenomena, and which it would be interesting to consider, did space permit. I may observe that the notion that manna is not the juice

of a plant, but that it is of the nature of dew and falls from the sky, is very ancient, and still lingers in the East. In the case of the manna-ash, it was disproved by the Franciscan monks Angelus Palea and Bartholomæus ab Urbe Vetere, who relate how they caused some of the trees to be covered with sheets, so that nothing could fall upon them; and that notwithstanding this precaution, manna was produced as before.[1] But this reasonable conclusion was regarded as scarcely orthodox, and the learned Matthioli was at much pains to supply an explanation more, as he thought, in accordance with Scripture.

The special point however which I desire to discuss in this paper relates to the *period* at which ash-manna began to be collected. Manna is mentioned more or less particularly by most of the Arabian physicians with whose works we are acquainted, but the allusions are all to Oriental manna and not to that of Italy or Sicily. This is manifest from the writings of Ebn Beithar[2], one of the most eminent and learned men of his time and a great traveller; and who being a native of Malaga, would probably when speaking of manna, have named that of Sicily, the more so as that island, having been for nearly 250 years under Saracenic rule, must have been familiar to the Arabs of Spain. Ebn Beithar is moreover in the habit of quoting extensively from other authors. He died about A.D. 1248.

One fact may be held to prove that the Saracens could not have been entirely ignorant of the production of manna in Sicily, and it is this:—There exists a mountain near Cefalu which is called by the Arabic name *Gibil-manna*, literally *Manna-mountain*[3]. Other mountains in the island retain the Arabic name of *gibil:* whether the word *manna* was affixed subsequently to the Saracenic occupation, or whether, as is more probable, the whole name was bestowed by the Arab population in virtue of the trees of the mountain yielding manna, is a point I am unable to decide.[4]

In the 13th century, Sicily was under the dominion of the Emperor Frederic II., a sovereign who appears to have been very solicitous to develop its resources, as is proved by many documents extant, relative to the affairs of the island. Thus in a letter dated A.D. 1239, he directs that certain Jews settled at Palermo are to farm his date plantations at Favara, and to cultivate them after their own manner. He also writes about the cultivation of his vineyards and the introduction of indigo and henna, and of divers other plants of Barbary, not then known to grow in Sicily. But so far as I can discover, there is no allusion to manna.[5]

Pegolotti, an Italian who wrote a sort of mercantile handbook *circa* A.D. 1340, has a chapter on Messina and Palermo, but does not mention manna as a production of Sicily; yet in enumerating the articles sold by the pound at the former city, he names manna apparently as a foreign production, since he couples it with cloves, cubebs, rhubarb, mace and long pepper.

Further evidence of a negative sort is afforded by Giovanni di Antonio da Uzzano, who in his work called *Libro di Gabelli*, written *circa* A.D. 1442, mentions the exports of Naples and of Calabria as wine, oil, corn, cheese, salted meat, nuts, chestnuts, soap, and oranges, but makes no reference to manna.[6]

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[1] Geoffroy, *Tractatus de Mat. Med.* II. 587. The whole disquisition of this author *De Manná solutivá*, is replete with information.

[2] Ed. Sontheimer, 1840–42., I. 207., II. 533.

[3] Amico, *Lexicon topographicum Siculum*, III. (1760). 242.

[4] Colonel Yule has remarked that Salmasius in his *Exercitationes Plinianæ* alludes to *Σικελικὸν μάννα* as mentioned by the *Medici recentiores Græci*, but without specifying more particularly who they are.

[5] *Historia diplomatica Friderici Secundi*, par J. L. A. Huillard-Bréholles, T. iv. 218; T. v. 571.

[6] Pegolotti's work forms the third volume and Da Uzzano's the fourth, of the book published

The earliest actual mention of manna as an Italian drug that I have found, is in the *Compendium Aromatariorum* of Saladinus, printed at Bologna in 1488. Saladinus was physician to one of the Princes of Tarentum in Calabria: neither the date of his birth nor that of his death is known, but it would appear that he was living between A.D. 1442 and 1458; for he states that during his time, the King of Arragon punished his druggist at Naples by a fine of 9000 ducats and degradation from office, because the king's physicians having prescribed *white coral* as an ingredient of a cordial electuary, the druggist not possessing it, substituted *red coral*. This incident affords a clue to the age of Saladinus, for it was Alphonso V., King of Arragon who laid siege to Naples, captured it in 1442, and died in 1458.

The work of Saladinus to which I have alluded, is a sort of handbook for the *aromatarius* or druggist, and is remarkable for much practical good sense. Besides numerous formulæ and descriptive notices of drugs, it contains a calendar enumerating the herbs, flowers, seeds, roots and gums to be collected in each month:—and in terminating the list for May, there occurs the following passage:

> "Collige etiā in isto mēse mānā tā in oriēte qm̈ in Calabria quia tunc ros ille "preciosius de celo cadit."

Contemporary with Saladinus lived Giovanni Gioviano Pontano (A.D. 1426–1503), a celebrated historian, statesman, philosopher and poet. Among his numerous writings is a work entitled *Liber Meteororum*, in which there is a poem headed *De Pruinâ, et Rore, et Mannâ;* this effusion notices in very circumstantial terms the collection of manna by the peasants on the banks of the Crati in Calabria, describing the production of the drug in language which may be rendered thus:

> * * * There in the middle of summer under a burning sun, while heat prevails, and the cloven earth gapes,—when no breeze is stirring and the humid air is still, it [the manna] gradually exudes and, condensed as a viscid fluid, runs into drops and thickens on the thirsty leaves,—and further hardened by successive suns, it acquires the appearance of wax and the taste of honey. Such as the bees obtain by their instinctive art and mutual aid, this, nature produces for the medicinal use of mankind.

I subjoin the passage in a foot-note.[1]

In the second half of the fifteenth century flourished Raffaele Maffei, called also Volaterranus, a learned and voluminous writer, who among other works

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anonymously by Gian Francesco Pagnini under the title of *Della Decima e di varie altre Gravezze imposte dal Commune di Firenze* etc., Lisb. e Lucca, 1765–6, 4°, III. 99; IV. 96–98. Some valuable information on Pegolotti and his writings may be found in Colonel Yule's *Cathay and the way thither*, Lond. 1866. (Hakluyt Society) Vol. II. 279.

[1] Quinetiam Calabris in saltibus, ac per opacum
Labitur ingenti Crathis, qua cœrulus alveo,
Quaque etiam Syriis sylvæ convallibus horrent
Felices sylvæ, quarum de fronde liquescunt
Divini roris latices, quos sedula passim
Turba legit, gratum auxilium languentibus ægris.
Illic æstate in mediâ, sub sole furenti
Dum regnat calor et terræ finduntur hiantes
* * * * *
Cum nullæ spirant auræ, et silet humidus aer
Contrahitur paulatim, et lento humore coactus
In guttas abit, et foliis sitientibus hærens
Lentescit, rursumque diurno a sole recoctus
Induit et speciem ceræ, mellisque saporem.
Quodque et apes præstant arte, ingenitoque favore
Hoc medicos natura hominum producit in usus.
Pontani Opera, Venet. 1513, *Lib. Meteor.* p. 113.

has left one entitled *Commentarii Urbani,* in which we find a sentence in the following words[1]:

> "Manna nostra ætate cœpit in Calabria provenire: licet orientali in-"ferior."

The signification of this I take to be, that manna first began to be collected in Calabria, within the author's recollection, but that it was not considered so good as the Eastern manna.

It is to be observed that Saladinus, Pontano and Maffei all speak of manna as a production of Calabria, and it is evident, I think, that for a long time the drug was afforded by that region and not by Sicily.

Brasavolus of Ferrara, describing the drugs found in the shops *circa* A.D. 1537, mentions manna as a production of Calabria.[2]

Matthioli (1548) remarks that of manna he has only seen two sorts, the Levantine and the Calabrian.[3]

Alberti in his *Descrittione di tutta Italia*, published at Bologna in 1550, mentions manna as found in Calabria.[4]

Garcia d'Orta (1563)[5] and Christopher Acosta (1574)[6] describe different kinds of Oriental manna, contrasting them with that of Calabria.

Still more significant is the fact that Fazelli, a well-known writer on Sicily (1558), in a chapter on the productiveness of the island, boasts of its wine, oil, sugar, honey, fruits and saffron, but says not one word of manna or the manna-ash.[7]

The manna collected in these early times was undoubtedly that which the trees produced spontaneously, but it was neither abundant nor cheap.[8] That which exuded from the leaves was esteemed the best, and was called *manna di foglia* or *manna di fronda;* it is described as being in the form of solid, translucent, white grains, resembling little grains of mastich, and having a sweet and agreeable taste. The second sort was that which flowed spontaneously from the trunk and branches, and was termed *manna di corpo;* while the third or commonest kind was that picked up from the ground.

Towards the middle of the sixteenth century, it was found that a much more copious supply of manna could be obtained by notching the bark of the tree, and this new method of procuring the drug began to be adopted.[9] But the innovation did not pass unnoticed, for in the year 1562 Marino Spinelli, being *protomedico* of the kingdom of Naples, set about inquiring as to the article sold by the druggists as *Manna:* and as he doubtless found it no longer corresponded with that of former days, he declared in concert with other learned physicians, that it was by no means good; and further to enforce his opinion, he procured the issuing of a public edict, prohibiting the druggists under a severe penalty from using any other manna than that of the leaf. This law proved very injurious to the Calabrians; it was felt also to be both severe and unjust by many of the physicians, one of whom, Annibal Briganti, took up the question in a philosophical spirit, made many visits to the manna-districts, and investigated the differences alleged to exist between one sort of exudation and another. This resulted in the discovery that manna, whether spontaneously yielded by the leaves or stem, or obtained from the latter by aid of incisions, is essentially the same substance and possesses like virtues. These observations were recorded by Briganti in a long discourse written in Latin, for which, I am sorry to say, he has had very little credit:—for not wholly trusting his own judgment on a subject so grave and controversial, he sent his MS. from Chieti where he lived, to another learned man, Donatus Antonius ab Altomari of Naples, who so entirely approved of it that he immediately published the whole of it in his own name![1] Under the assumed authorship of Altomari, we have then this essay as a quarto pamphlet of 46 pages, printed at Venice in 1562 and entitled *De Mannæ differentiis ac viribus deque eas dignoscendi via ac ratione*: and as if to give the work greater weight, it is in the form of an epistle addressed to Hieronimus Albertinus, Neapolitan prime minister of Philip II., a monarch whose connection with the English crown and the Spanish Armada has caused his name to be well remembered in our annals.

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[1] Volaterranus (Raph.) *Comment. Urban.*, Paris, 1515, fol., lib. 38. f. 413. I have not been able to consult an earlier edition of his works published, it is said, at Rome in 1506.

[2] *Examen omnium simplicium,* Lugd. 1537, 8°, p. 335.

[3] Comment. in Lib. I. Diosc. cap. 70.

[4] P. 198.

[5] *Colloquios dos Simples,* etc., Goa, 1563, 4°, p. 132.

[6] *Tractado de las Drogas y Medicinas de las Indias Orientales,* Burgos, 1578, 8°, p. 399.

[7] *De Rebus Siculis,* Dec. I. lib. i. ch. 4. *De Ubertate Siciliæ.*

[8] Fiore da Cropani in his *Calabria Illustrata,* Napoli, 1691, says (p. 253) that the *manna di fronda* has been sometimes sold even in Calabria at 50 *scudi* for 6 ounces.

[9] In Bauhin's edition of the Commentaries of Matthioli, published at Basle in 1574, the practice of making incisions in the bark of the tree is distinctly alluded to, as being followed in Apulia and Calabria "*hâc ætate.*"

The custom of promoting the exudation of manna by wounding the stem and branches of the trees, must have occasioned a great increase in the production of the drug, a proof of which we have in the statement of Fiore (1691) that the sole district of Campana and Bocchigliero affords annually 30,000 lb. with great profit to the gatherers and 1100 ducats of excise to the government.[2] Of the period when the traffic in manna commenced in Sicily, I have no information. Paolo Boccone of Palermo mentions in his *Museo di Fisica e di Esperienzie* which appeared in 1697, several localities in Italy whence manna is obtained, adding that *manna forzata* (that from incisions being thus called) is also produced in Sicily.[3]

In conclusion let me recapitulate the points in the history of manna, upon which I have endeavoured to throw light:

1. That the manna known in Europe in very early times was probably all of Oriental origin.
2. That manna of the ash (*Fraxinus Ornus* L.) began to be collected in Calabria in the first half of the fifteenth century.
3. That the practice of making incisions in the tree in order to promote the exudation was not commenced until about the middle of the sixteenth century, previous to which period, the only manna obtained was that which exuded spontaneously.
4. That although the existence in Sicily of a mountain called by the Arabic name *Gibilmanna*, would seem to indicate that manna was collected during the period of Mussulman rule in that island (A.D. 827 to A.D. 1070), evidence has not been produced to prove the fact:—but that on the contrary, it appears that manna was gathered in Calabria long anterior to its collection in Sicily.

Professor **Bentley** said the subject of the able paper which they had just listened to scarcely admitted of discussion, and Mr. Hanbury had, as usual, pretty well exhausted his theme. He quite approved of the course he had adopted in not attempting to account in any natural way for the manna of the Israelites, though no doubt he was aware of the paper by Dr. O'Rourke, which ascribed the fall of manna described in the Book of Exodus to a species of lichen, the *Lichenora esculenta*. Although he could not agree with this conclusion, the paper was one well worthy of their attention.

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[1] "*Senza pure un minimo segno di gratitudine.*"—The account of this shameless piracy is related with much moderation by Briganti himself in his Italian edition of Garcia D'Orta, published at Venice in 1582 (p. 50).

[2] *Della Calabria illustrata*, Nap. 1691–1743, fol. p. 253.

[3] Obs. xiv.–xv.

Mr. **Haselden** (Vice-President) was also of opinion that the subject did not admit of much discussion. He thought, however, it was worthy of remark that now-a-days the value of manna did not seem to be appreciated. When he was an apprentice it was very common to sell manna by the oz. or ¼ lb. to be used as an adjunct to the daily food of children, or as an addition to the then every-day prescription of a black draught. Physicians now seemed to think black draughts undesirable, and for manna, consequently there was scarcely any demand; indeed, almost its only use was in making up calomel pills, for which purpose it was about the best thing one could use.

The **President** inquired if Mr. Hanbury had ever met with artificial manna having the external crystalline appearance of the best manna, but which closer inspection showed to be made up. Not long since he had seen a specimen which came, he believed, from France, and as far as he could understand, it was made by dissolving the common small manna, evaporating it down to a certain degree of dryness, and then running it into moulds, which gave it the appearance of fine flaky manna.

Mr. **Hanbury** said he had heard of artificial manna, but had never met with such a thing. It seemed to him, however, that it would be impossible to imitate the stratification of a natural exudation like manna, so as to avoid detection.

Mr. **Morson** said he was rather surprised at hearing the question put by the President, but by going back about forty years, he thought he could give the history of the artificial manna. When he was a student in Paris, an assistant who lived with him in the house of one of the editors of the 'Pharmaceutical Journal' took it into his head to manufacture manna, and he succeeded most wonderfully. He first made a syrup from the commonest kind of manna, and crystallized it, but there then arose the difficulty how to produce the beautiful, brilliant appearance of fine manna, which he got over by running into a mould made from the stump of a tree, and the result would almost defy detection. It was frequently rather dark coloured, but a little charcoal got rid of that. He was not in the secret, but he was not quite sure whether a little sugar might not have been added. However, he produced the most beautiful crystalline manna, which he sold at a good profit, the manufacture being carried on in some of the old quarries of Paris, which formed a kind of laboratory under the shop in the Champs Elysées. The inventor afterwards went to Hayti, and then to New Orleans, where he published several papers of a scientific character.

NOTE UPON PULVIS CRETÆ AROMATICUS AND LAC AMYGDALÆ AMARÆ.

BY A. F. HASELDEN, VICE-PRESIDENT.

The observations which I am about to make are of so simple a character, that they seem almost to require an apology, but in speaking for myself, a worker in pharmacy *con amore*, very small matters become interesting when looked at from a pharmaceutical point of view, and this will probably apply to many others. As long ago as 1860, a correspondent in the 'Pharmaceutical Journal' suggested what he considered an improved method of making aromatic confection, now described in the P. B. as Pulvis Cretæ Aromaticus. His suggestion was to make an infusion of the saffron, evaporate the liquor to a syrupy consistence, then mix it with the dry chalk, afterwards adding the other ingredients; he also proposed the employment of the essential oils of cloves and nutmegs in place of those aromatics in bulk. In 1863, three years later, the subject of aromatic confection in powder was again brought before the notice of pharmaceutists at one of our evening meetings, the development of a fine yellow colour being the point of interest, but after some conversation, the discussion ceased, as the introducer did not state in full the *modus operandi;* although this was supposed to have been generally known amongst pharmaceutists, it has never, I believe, found its way into print, and that is one reason why I have re-introduced it; another is, that many of our younger workers may never have heard of the bright yellow powder; and again, having stated how it may be prepared, I shall proceed to offer a reason why, in my opinion, it should not be so made. The plan which I have followed, is to make a strong infusion of the saffron, using only sufficient water to soak it well, the liquor when cold is strained off and mixed with the chalk, and the two are dried together and afterwards powdered, the saffron from which the infusion was poured off is to be rubbed up with the lump sugar; these are to be thoroughly dried and powdered, and lastly, with the chalk containing the product of the infusion incorporated with the other ingredients, and passed through a fine sieve, and in this way may be obtained the yellow aromatic chalk powder, *alias* aromatic confection. This powder, when mixed with a liquid, to form a draught or mixture, does apparently give out its colour more rapidly, but it is not in reality so great as that of the ordinary powder when well rubbed up with a liquid and made into a draught. In the longer process of drying the moistened substance, the colour is partially destroyed, and, another point worthy of note, the aroma of the saffron is very much diminished. I prefer the use of the clove and nutmeg in powder to the essential oils, as I believe they are in that condition pleasanter and more grateful. I stand committed in favour of the Pharmacopœia preparation as it is, with but one exception, and that is the increased quantity of saffron ordered, a substance of a costly nature, offering great temptation to adulteration, and, according to modern writers generally, chiefly used for the sake of its colour; surely a little less colour and more profit would not be altogether inconsistent with the production of a remedy equally useful if not quite so pretty.

The P. B. preparation contains nearly half as much more saffron as the P. L. did, having 3 oz. of saffron in 50 against 2 oz. in 47½.

I should be the last to recommend economy, if any good could be obtained by liberality; at the same time, I cannot help condemning extravagance unaccompanied by a corresponding advantage.

I will now draw your attention to another preparation in common use, though not a Pharmacopœia one. I allude to the Lac Amygdalæ Amaræ, frequently prescribed in combination with or as a vehicle for other remedies, and used as a lotion. In preparing this milk, the almonds are almost if not always directed to be blanched, under the supposition, I presume, that a whiter product will result; the process of blanching, if hot water be not handy, occupies an amount of time which is sometimes highly inconvenient. This may be avoided by simply washing off the dust and dirt from the almonds with cold water and wiping them with a clean cloth; the milk prepared from these unblanched almonds will be as white as that made from the blanched; the seed-coats may contain a minute portion of tannic acid, but so small as to be unobjectionable, whereas of colour taken up there is no appreciable quantity. Any one more than ordinarily disposed to criticize may observe that the milk prepared from the unblanched almonds is not quite as white as that from the blanched, and such a remark would be correct, but the difference is so slight that, practically speaking, it goes for nothing; but to what is it due? to the greater density and opacity of the fluid. A larger amount of miscible material is obtained from the unblanched than from the blanched almonds; unblanched and dry they can be quickly reduced to a coarse powder, and more effectually broken up than the semi-moistened slippery blanched ones. The residue from the 240 grains of blanched almonds weighs 49 grains; from the same weight of unblanched, deducting 17 grains for the coats, 33 grains, thus clearly showing that more is worked into the milk from the unblanched than from the blanched.

Again, if the two be examined and estimated by the amount of odour, it will once more be decided in favour of the unblanched product. In these days of railroad speed, cloak-rooms, and telegrams—when one is expected to be able to send to three or four stations at about the same hour of the day—it must surely be worth something to be able to make as good if not a better preparation, with less inconvenience and a certain saving of time.

For this idea I am indebted to a young friend, and to any one not aware of it, it is a wrinkle worth taking into consideration. One word in finishing, you see how small a matter I have ventured to bring before you. Many of you in the course of the year, using your faculties of observation, must meet with many points better worth recording. Let me say, bring them here.

The Chairman, in presenting the thanks of the meeting to Mr. Haselden, said he was rather surprised to hear it suggested that to make *Pulvis cretæ aromaticus* an infusion of saffron should be used and essential oils, in order to produce a bright powder. This bright powder was usually produced by wholesale druggists, but he could assure the meeting that no infusion of saffron was used, nor was any use made of essential oils. The dry saffron and spices were ground up together, the whole secret being in the weight of the stone which was used to grind the materials. If they were worked up by hand in a mortar, it was not possible to exert sufficient force to bring out the colour from the saffron and force it into the chalk, but when two granite stones of a ton weight were employed, and a large quantity made at once, the whole of the colouring matter was extracted from the saffron and absorbed by the chalk. That was the whole secret.

A FEW EXPERIMENTS AND NOTES ON SYRUP OF IODIDE OF IRON.

BY F. G. BEARDSWORTH.

Seeing in the 'Pharmaceutical Journal' for September an able paper on syrup of iodide of iron, has induced me to send you a short account of some experiments tried and results obtained relative to the keeping powers of this syrup.

Some of the syrup had only been made a few days, and was much discoloured, it having been kept according to the well-known formula of iron wire in a dark blue bottle. Some had been kept in a large stone bottle, quite full and well corked, so that no light or air could have by any possibility penetrated to it. This was very much discoloured, in fact was of an amber colour, being very similar to oil of almonds, excepting that it was of rather a browner shade.

After careful observation the following results were obtained, viz.:—

No. 1.—Syrup, slightly discoloured, after being made three days, and having been kept in a small blue stoppered bottle with iron wire in it, was put into a four-ounce white phial, and *two grains* of *citric* acid put to it. At the same time one ounce and a half of syrup out of the same *blue* bottle, without any acid, was put into an ounce and a half phial, a piece of fine iron wire being made to traverse the whole length of the bottle, and both bottles were put in a window where there is a bright light, but no sunlight. Upon examination two days after, bottle No. 1 was a little clearer and less coloured; bottle No. 2 having no perceptible difference in it.

At the termination of a week, I examined the bottles again, and found bottle

No. 1 was beautifully clear, no colour, it being as clear and colourless as possible.

Neither was there any brown or other skim on the surface of the syrup, nor was there any precipitate, nor black mark round the cork as is generally the case with most preparations of iron.

No. 2 bottle had no visible difference in it, the colour being about the same.

No. 2.—Syrup made many months ago, and having been kept in a stone bottle without any light, had gone a very deep amber colour. This was put in three different bottles, one a twenty-ounce green stoppered bottle, one a twelve-ounce ordinary blue medicine bottle, and the other a small white two-ounce phial, halfway round which was put a piece of clean white paper, so as to traverse the whole *length* of the bottle, but only reaching halfway *round* it.

In each *citric* acid was put in the proportion of one grain to the ounce. After two days I examined the three bottles, when I observed the following:—

That syrup in the twenty-ounce *green* bottle was about one half as much discoloured as originally. That in the twelve-ounce medicine phial was still clearer than the last, in fact was *almost* clear. That in the small two-ounce white phial was perfectly clear, and is so yet. There was, nor is, not any skim on the surface, neither was there any precipitate.

No. 3 was syrup out of the same large jar as the last, and with citric acid in the same proportion; but, instead of being put in a white bottle, it was put in an ordinary deep blue syrup bottle. Several days after putting the syrup in the bottle, and keeping it in the dark, I examined it, and found it was slightly bleached; and, although kept in the same position, it does not become any clearer than it has been before,—thereby, I think, clearly proving a *bright* light, combined with citric acid in the above proportions, is all that is required to clarify and decolorize and keep clear this most elegant medicine.

In the paper by Mr. Carteighe, he speaks of using tartaric acid, as recommended by Mr. Jeannel; but I think, from the foregoing experiments and results, citric acid is to be preferred to the tartaric acid for two reasons,—firstly, on account of its being quicker in its action; and, secondly, it is a much nicer acid than the tartaric, and more certain in its action. Mr. Carteighe speaks of a brown skim found on the surface of a syrup in which tartaric acid has been put. Is it possible that a decomposition of the iodine (which is a very uncertain article) takes place, and that, by so doing, it causes the tartaric acid to form along with the iron in the syrup a tartrate of iron? If so, the action of the syrup may not agree with what a practitioner might expect; whereas, in the case of citric acid, there being no skim on the syrup, nor any precipitate, nor any other *visible* effect on the syrup beyond the bleaching of it, may we not infer that citric acid is by far the better acid to use? I find that syrup always kept in the dark is very apt to crystallize as well as turn brown unless the syrup is very carefully made, and that, iron wire being put in, the syrup will crystallize on the wire sooner and in greater quantities than on the bottom or sides of the bottle. I think, from the foregoing experiments and results, that we may infer that syrup of iodide of iron, exposed to a bright light in white bottles in which citric acid has been put in the quantity of one grain to the ounce, will keep without becoming discoloured; and that, if discoloured, the quickest and best method to decolorize it is to cover the bottle halfway round with white paper which traverses the whole length of the bottle, and add citric acid in the above quantity, and expose to a bright light the side uncovered.

Part of the syrup with which these experiments have been tried has been, and is being, used by patients; and the effect is exactly the same as that of newly-made syrup which has had no acid in it.

As regards the *preparation* of the syrup, I agree with Mr. Carteighe that the process recommended and ordered by the Pharmacopœia is everything that is required.

I hope the results of these few experiments may prove useful to some of the readers of your valuable Journal.

Blackburn.

SYRUPUS FERRI IODIDI.

BY T. H. HUSTWICK.

After all that has been said and written on this well-worn subject, one might almost be tempted to think that nothing more remains to be said as to its peculiarities. I am, however, induced to offer the following remarks as the result of my experience in making this syrup. The manner thereof I learned during my apprenticeship, and from the superior results obtained by it, have used the same ever since. Of course I do not presume to entertain the idea that I am by any means the only one, or even one of a select few, who are possessed of this process; but that there are some who are unacquainted with it, is evidenced by the correspondence to which it has given rise in this Journal.

The process is this, and is equally applicable to the formulæ of the old and new pharmacopœias. To produce the quantity there ordered, the iron wire well rubbed with sand-paper is cut into lengths of about ¼ inch, and put into a flask with, say, 4 oz. of water; these are boiled till the iodine colour has disappeared; the solution is filtered into an evaporating-basin containing the sugar in coarse powder, heat is applied to this while the filtration is proceeding, and the filter is being washed, it is then brought to the boiling-point as rapidly as possible, and the gas flame extinguished; when cool, sufficient water is added to make the required measure. The resulting preparation is clear, colourless, and will keep unchanged any reasonable time. It will be seen that this process differs from that of the old Pharmacopœia, in adding the iodide solution to the sugar, instead of the sugar to the solution; from that of the new, in adding the solution to sugar instead of to syrup, and from both in the application of a higher degree of heat. It seems to me, that by adding the solution to the sugar, a slight degree of oxidation is prevented, whilst the boiling-heat ensures a more perfect combination. It is worthy of note, that Mr. Carteighe, in his paper read before the last Pharmaceutical Conference, touches upon this latter point, and he is the only one of your correspondents who notices it; he says, "that if the syrup is heated rapidly to boiling, before adding the iodide solution, the preparation has less colour than if made at the lowest temperature at which sugar will dissolve." He also speaks of the "original colour" of some of his specimens being bleached by exposure. And Mr. Holloway, in his letter of April, 1868, also notices the fact of the acquired colour being discharged by similar means; in both of which cases it seems that length of time and exposure produce similar effects to what a higher degree of heat applied at the first does, excepting that with the greater heat a more permanent result takes place. My experience prompts me to say, that syrup of iodide of iron, properly prepared, should have no "original colour" whatever, but only the very pale sea-green tinge peculiar to a freshly-prepared solution of the iodide.

My stock of the syrup has been made considerably over six months, and kept in a common green glass bottle in one of the shop cupboards, whence it is used as occasion requires, and yet, without any of the precautions that have been so frequently suggested, it is as free from colour now as on the day it was made.

I would remark, that as rapidity of manufacture is an element of success, it is better to use the finest iron wire in preference to tacks, as the wire presents a larger surface to the action of the iodine, and combination, therefore, more quickly takes place. The process is simple and easy, requiring no more than average skill in manipulation; and if my professional brethren find it as efficacious as I have done,—and I do not see why they should not,—of course there is an end to the cumbrous paraphernalia of small bottles and parchment paper, storing in the window, and the very objectionable addition of either phosphoric or other acids, which addition, I am glad to see, meets with no favour from Pharmaceutists.

Mr. **Carteighe** thought an apology was almost needed for recurring to this subject, inasmuch as they were told in some quarters that the syrup should always be used within a fortnight at the utmost from the time of making it. However, there were, no doubt, many chemists in the country who required to keep it a much longer time than that, and therefore any suggestions on the subject might be useful. With regard to the first paper, he thought probably the same results would have been obtained without the addition of the citric acid, the result being due in his opinion to the bleaching action of the rays of light and heat, the action of which was very likely increased in a slight degree by the addition of the white paper round one half of the bottle. With regard to the conclusions of the writer of the second paper, he could only say that it was still a moot point whether the syrup should possess any colour or not; but this gentleman used the word colour in a somewhat remarkable way, as he said the syrup had no colour, *except* a pale green. No doubt, however, a much paler colour was obtained when the syrup was made in the way described than in the ordinary manner.

Mr. **Haselden** said that after perusing Mr. Carteighe's paper, read at the Conference at Exeter, he had tried the experiment of exposing to the light in a clear glass bottle, some syrup of iodide of iron which had been made about six months, and had been put on one side as being useless in consequence of being so much discoloured. The result was that in about ten days it became almost white, whilst that which was kept in the dark wrapped up in brown paper, remained discoloured. The fact was that light appeared to act very differently on different preparations of iodine. Ointment of iodide of potassium exposed to the light became decidedly yellow, but if placed in the dark it regained its original white hue. This was proved at the Exhibition of 1862, when he exhibited several specimens of ointment, amongst others the one alluded to. On his going there one day, the gentleman who had the care of the collection told him he had removed the iodide of potassium ointment because it had become quite yellow. He thanked him for his attention and asked to look at it, but to his surprise, when they looked at it, it was quite white. After the Exhibition was closed he tried the same experiment over and over again, and always with the same result.

Dr. **Redwood** remarked that in the discussion of this subject two statements had been made; one to the effect that the syrup, if carefully made according to the instructions of the Pharmacopœia, could not be kept for any length of time without a change of colour taking place, which generally commenced on the surface, whilst, on the other hand, it was said by other gentlemen that, preparing the syrup in the same way, they never failed in keeping it for any reasonable time up to five or six months without any change of colour taking place. He had been in the habit of making and keeping this syrup for a great number of years, and his experience was that if properly made and preserved it could be kept without change for several years. He had samples of syrup of iodide of iron made without any extraordinary precautions, which had been kept for six years or more, without any change of colour taking place. He had requested the curator to bring down two specimens from the Museum, both of which had certainly been made for above a year, one he believed for three or four years. They had been kept in ordinary white stoppered bottles, without any particular precaution, and, as they could see, no discoloration had taken place. Indeed, he never expected it would. At the same time, cases had come under his notice where the syrup had undergone a change of colour, and that very soon; but these were cases in which he had never been able to satisfy himself that proper care had been exercised, and he believed—though he had no positive proof of the fact—that when the syrup speedily underwent a change of colour, it arose from one of the following causes,—either that inferior sugar was used or an insufficient quantity, or that the syrup, after it was made, had been exposed to an impure atmosphere. Generally speaking, he believed the cause of failure lay in the sugar, for a great deal of refined sugar of commerce was far from being pure. He believed that if syrup were carefully made with the purest refined sugar, it would keep perfectly well if it met with no atmospheric contamination afterwards. Any one who had any experience in a laboratory was aware that the atmosphere was very often impure; sometimes there were ammoniacal vapours floating about, and sometimes the fumes of nitric acid, and if these had access to so delicate a substance as syrup of iodide of iron, they could easily understand that decomposition would take place. He was desirous of throwing out these suggestions for verification, for, as he had said, he was not able at present to demonstrate the fact that the discoloration took place in this way, but if it were so, it would account for the discrepancies in the experience of different operators.

Mr. CARTEIGHE asked if the specimens brought from the museum had been kept in the light or in the dark.

Dr. REDWOOD said they were not exposed to direct sunlight, nor were they kept in the dark; but he had had some specimens kept upstairs in a more secluded situation with the same result, and he should be surprised at finding any discoloration. They were always kept in clear glass bottles, which might have a different effect to that produced by opaque stone jars.

Mr. CARTEIGHE would like to know what Dr. Redwood considered pure sugar. He presumed he meant *bonâ fide* cane sugar, not beet sugar.

Dr. REDWOOD was not aware that there was any chemical difference between cane and beetroot sugar. The impurities he referred to were those which arose from the presence of the remains of the materials used in refining the sugar. Sometimes there were traces of lime, or salts of lime, or albuminous matter: there were great differences in different varieties of sugar in this respect. He should select a sugar that would form a clear and transparent solution, and if it would not, it should be clarified before using for such a purpose. The French were very particular, in making syrups, to well clarify their syrup before using it, although they used refined sugar, not taking it for granted that the sugar was entirely free from foreign matter, as such was rarely the case.

EDINBURGH MEETING.

The first meeting of Session 1869-70, was held in St. George's Hall, 119A, George Street; Mr. AITKEN, President, in the chair. There was a full attendance.

The SECRETARY intimated the following presentations to the Library:—Baildon's 'Nature-Printed Ferns,' and 'Hortus Medicus,' by George Graves and Dr. J. D. Morries, with coloured plates: Mr. H. C. Baildon. 'Manual of Materia Medica and Therapeutics,' by Dr. Milne: from the Publishers, Messrs. Livingstone, Edinburgh. 'Index to Twelve Volumes of the Pharmaceutical Journal:' from the Society in London. Proceedings of the American Pharmaceutical Association: from the Association. September and October Number of the 'Pharmacist:' from America.

The PRESIDENT gave the following Address:—

Gentlemen,—In opening the first meeting of another session I beg to express to you my deep sense of the honour conferred in placing me, for the second time, in this chair. My earnest desire will be to do all the duties to your satisfaction, and should I be successful in that, your appreciation of my humble endeavour will be the best reward you can bestow.

It is gratifying to see so many present this evening. Meetings of this kind are calculated to do much good, not only in enabling us to get acquainted, but also in bringing together masters and assistants, and giving them opportunities of conversing on subjects that may conduce to their mutual benefit and welfare.

The few remarks I wish to make to-night are intended more particularly for the younger members,—the assistants and apprentices; and I begin by impressing upon them the necessity there is, at all times, of reading, and the careful study of those works bearing more immediately upon their own vocation, so that they may be able to keep pace with the times, and be thoroughly up in all the minutiæ of their calling.

They must see to it, that they are expert, not only in the industrial but also in the scientific branches of the profession. Knowledge is power, and being powerful they must have sufficiency for the proper carrying out of it.

No difficulties are to be allowed to hinder or interfere in any way. The seed, if there, must be nourished, and carefully tended. The dull boy is often the clever man, and only waits his opportunity to shine forth. We read of extraordinary men who have risen from the ranks by the force of will and application. The collier boy rises from degrading and unremunerative labour to invent a machine that carries blessings with it throughout ages. A shoemaker's apprentice, by devoting his scanty leisure to self-improvement, rises from his bench to be a scholar, and by his writings improves others. I need not give further instances or examples, there are many such in every trade and profession, and I am confident that the young men of ours will never lose the spirit to rise to higher and better things. Who amongst us would be contented to sit still as a half-remunerated drudge, and see, without one spark of ambition, others rising above him, and taking the place he might have won. The great hindrance to elevation is ignorance; it may be more our misfortune than our fault, but you will readily admit that the want of a good sound education is a bar to progress, which meets a man, not at one but at almost every step of his career. You ought therefore to embrace every opportunity within your reach for improvement. Let your reading and study be earnest, regular, and determined. Think well what you are about. You will find the connection between thinking and doing is not only pleasant but profitable. Every one must be conscious of this who has experienced the satisfaction of having accomplished with his own hands, a result derived solely by means of his own energy and industry.

If you would not have the ivy to creep on the ground, you must plant a tree, or erect an object which it can embrace, and by embracing ascend; and if you would detach the heart from embracing the dust, you must give it another and a nobler object. Nothing that is good or great can be accomplished without application and study, and that study must have plan. Business, to be successful, must be conducted on system. You are young and able, why hide your light under a bushel. The fig-tree was withered, not for bearing bad fruit, but for yielding no fruit. The unprofitable servant was cast into outer darkness, not for wasting the talent committed to him, but for not employing it. Apply sufficient heat and you will bend the hardest iron. It is related that the forest of the Pyrenean Mountains being set on fire, and the heat penetrating to the soil, a pure stream of silver gushed forth from the bosom of the earth, which revealed, for the first time, those rich lodes afterwards so celebrated. Who can tell the rich soil that may be in some of you just waiting for the heat to send forth doubly rich streams of pure silver, it may be of gold? Let your spare time, at all events, be profitably occupied and employed in a right manner, and as reasonable and responsible beings; and the very difficulties you may have to encounter in the acquisition of knowledge will give a zest to every attainment, the pleasure of which can only be experienced by those who have really overcome them.

Dr. **Stevenson Macadam** was then introduced to the meeting, and read an interesting paper, "On the Various Groups of Alcohols," and which he illustrated with diagrams, etc.

Thanks were proposed to Dr. Macadam by Mr. **Baildon**, seconded by Mr. **Ainslie**, and carried with acclamation.

Mr. Raimes moved a vote of thanks to the chairman for his Address, which was carried unanimously, and the meeting separated.

PROVINCIAL TRANSACTIONS.

BATH CHEMISTS' ASSOCIATION.

At a meeting of this Association the following paper was read, "On Charges for Dispensing Medicines," by Mr. J. C. Pooley:—

The subject I purpose to bring before you this evening will not be uninteresting, because our material interests are deeply concerned in it. If you will give me for a time your patient attention, I will endeavour as briefly as possible to give you the results of my investigation into the subject of prices, and from these results to draw some practical conclusions.

Let me assume that our occupation is not merely a trade, nor is it purely a profession, but a combination of the two, and, therefore, it is needful to make a distinction in the principles upon which our charges are based. The trade part of our occupation may, to some extent, be regulated by the principles of supply and demand; but in the professional part, other considerations must be taken into account,—such as expensively acquired knowledge, experience, skill, time, and responsibility, and these demand an adequate remuneration, in addition to the selling prices of the articles employed; it is to this latter department alone that I have directed my attention, and ask yours.

In pursuance of my object I wrote to some of the first Dispensing Chemists in London and in the provinces, and received a courteous reply from all, with their list of charges for dispensing ordinary prescriptions, but with the request from some that their names should not be stated in connection with their list. I have drawn up a table of these charges without the names being attached, but feel at liberty to mention the names separately, that due weight may be given to their statements. They are as follows:—Messrs. Bell and Co., Godfrey and Cooke, Hanbury and Co., Savory and Moore, of London; Deane, Clapham; Schacht, Clifton; Smith, Cheltenham; Randall, Southampton; Reynolds, Leeds; Brady, Newcastle; Giles, Clifton; Clay and Abraham, Liverpool; besides these, you will find the printed price lists of the chemists in Edinburgh and in Hull.

My object in procuring these was not to take an average from them, but to gather information, and thus, with the experience before me of first-class firms, both metropolitan and provincial, to endeavour to suggest a list of charges suitable for all of us who claim to be classed A 1 amongst Dispensing Chemists.

In my endeavours, the following considerations had to be borne in mind:—

That the public must not be alarmed by any violent change.

That to secure co-operation from my fellow-chemists, the charges should approximate those of leading provincial firms.

That an adequate charge should be made for professional skill, knowledge, and experience, for time and responsibility, and for a proportion of the general expenses of the establishment, in addition to the selling price of the materials employed.

The first thing that impressed my mind, when examining the lists of charges confided to me, was the apparent want of any fixed principle upon which they could have been founded. As an example, one first-class London firm charges for ordinary mixtures by prescription, as follows:—

	s.	*d.*
4 oz. mixture	1	6
6 " "	1	8
8 " "	2	0
10 " "	2	3
12 " "	2	9
16 " "	3	3
20 " "	4	0

Here we see the 4 oz. mixture charged 1*s.* 6*d.*; then, for the two *additional* ounces in a 6 oz. mixture, the charge is at the rate of 1*d.* per oz.; for the next two ounces, it is at the rate of 2*d.* per oz.; for the next two ounces, it is at the rate of 1½*d.* per oz.; for the next two ounces, it is at the rate of 3*d.* per oz.; for the next four ounces, it is at the rate of 1½*d.* per oz.; and for the last four ounces, it is at the rate of 2½*d.* per oz. May we not ask ourselves in vain, upon what principle could those charges have been based? and yet we are all more or less guilty of similar apparent inconsistency. Well might one of the most respected members of our fraternity, in writing to me, express himself in the following language:—"Our mode of charging is so empirical, and so difficult to adjust, that I cannot see where honesty ends and dishonesty begins."

Reflecting upon what appears to be such inconsistency in charging, I came to the conclusion that my suggestions must be based on a reasonable and equitable principle, or it would never commend itself to others.

I now submit for your approval the following charges for ordinary mixtures by prescription (including bottles), containing not more than 1 drachm of spirit or tincture to each ounce, and only small quantities of quinine or other expensive ingredients, and I name the principle upon which each charge is based.

	s.	*d.*
2 oz. mixture	1	0
3 „ „	1	3
4 „ „	1	4
6 „ „	1	6
8 „ „	1	8
10 „ „	2	0
12 „ „	2	4
16 „ „	3	0
20 „ „	3	6
24 „ „	4	0
32 „ „	5	0

I.e. for 2 oz. at the rate of 6*d.* per oz.
„ 3 „ „ 5*d.* „
„ 4 „ „ 4*d.* „
„ 6 „ „ 3*d.* „
„ 8 „ „ 2½*d.* „
above 8 „ 2*d.* for each *additional* ounce.
above 16 „ 1½*d.* for each *additional* ounce.

The above charges are irrespective of doses, as it does not appear to my mind that the principle of charging *per dose* can ever be carried out to the satisfaction of the public, but that of limiting the quantity of tincture or other expensive ingredient to a fixed proportion, virtually accomplishes the same object, and will bear explanation when required.

As the item next in importance, I take pills, and suggest, as suitable, a minimum charge of sixpence for one or more ordinary pills by prescription, up to six, and threepence for every additional six pills or fraction thereof:—

	s.	*d.*
Thus: 1 to 6 pills	0	6
7 to 12 „	0	9
13 to 18 „	1	0
19 to 24 „	1	3
above 24, charge	0	6 per doz.

For draughts I would suggest:—

1 draught	1	0
2 draughts	1	9
3 „	2	6
4 „	3	0
6 „	4	0

I.e. for 2 draughts, at the rate of 10½*d.*
„ 3 „ „ 10*d.*
„ 4 „ „ 9*d.*
„ 6 „ „ 8*d.*

For 1 or 2 pills and a draught from the same prescription, 1*s.* 3*d.*

For drops, composed chiefly of tinctures, etc., I would suggest they should be charged at the rate of sixpence per ounce, and sixpence for dispensing, etc., *i.e.* :—

	s.	*d.*
1 oz. of such drops	1	0
1½ „ „	1	3
2 „ „	1	6
3 „ „	2	0
4 „ „	2	6

Stoppered bottles extra.

For cheaper material, such as liq. potassæ, or liq. arsenicalis, I would charge for 1 oz., 1*s*., and 4*d*. per oz. for each additional ounce.

For powders I would suggest a minimum charge of sixpence; above three, at the rate of twopence each; above six, charge a penny for *each additional* powder; thus :—

	s.	*d.*
3 powders (and under)	0	6
4 „	0	8
6 „	1	0
12 „	1	6
18 „	2	0
24 „	2	6

For lotions, gargles, and decoctions I would suggest a minimum charge of one shilling for four ounces, and three-halfpence for each additional ounce, *i.e.* :—

	s.	*d.*
4 oz. lotion	1	0
6 „ „	1	3
8 „ „	1	6
10 „ „	1	9
12 „ „	2	0
16 „ „	2	6
20 „ „	3	0

If containing spirit in excess of one drachm per ounce, an extra charge to be made.

For ointments (in covered pots) I should suggest a charge of sixpence per ounce, and sixpence for dispensing, etc., *i.e.* :—

	s.	*d.*
½ oz. ointment (and under)	0	9
1 „ „	1	0
1½ „ „	1	3
2 „ „	1	6

There are many other points of interest in this subject which might be noticed, but they have been so well treated by others, such as Mr. Hampson, of Manchester, in his pamphlet, and Mr. Smith, at the Exeter Pharmaceutical Conference, that I need not allude to them here; the pressure of many other claims upon my time has been great, and will, I trust, be received as an apology for errors or shortcomings. I have suggested a plan or principle upon which our charges may be based; and a schedule of charges,* which appears to me to meet our requirements, and not to violate the considerations which I have laid down as needful to be borne in mind; that my suggestions will meet with general approval, it would perhaps be presumptuous in me to expect, but if it leads to any agreement amongst ourselves, it may be useful to others as an example, and my labour will not have been in vain.

THE BIRMINGHAM CHEMISTS' ASSISTANTS' ASSOCIATION.

This Association held the first General Meeting of its Third Session on Wednesday, October 13th, at the Globe Hotel, Bull Street; the President, Mr. W. J. Churchill, in the chair. After several new members had been enrolled, the business of electing new officers for the ensuing Session was proceeded with, when the following were appointed, namely:—President: Mr. W. J. Churchill (re-elected). Vice-President: Mr. R. C. Turton (re-elected). Committee: Messrs. Mucklow (re-elected), Churchill (re-elected), Turton (re-elected), Homer, Pattison, and Sharples (re-elected); who afterwards added to their number Messrs. Howes and Bliss. Mr. Homer was appointed Hon. Secretary and Treasurer.

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* I have used the word "charge" throughout, as being more in harmony with the professional character of this part of our occupation, than the word "price."

The CHAIRMAN then stated that he felt great pleasure in alluding to the flourishing prospects of the Association; and although he was sorry to perceive that many of the original members had left the town, he was glad to find that there were many new ones joining, and that, since the formation of the Society nearly two years ago, upwards of seventy-five names had been registered. Much useful information had been derived from the reading of papers on various subjects connected with pharmacy, and subsequent discussions; and numerous papers had been volunteered for the ensuing Session. He concluded by saying that the most notable feature of the Association was the fact, that several of the members had passed either the Preliminary, Modified, or Minor examinations of the Pharmaceutical Society.

The following Wednesday was fixed for the first ordinary meeting, when the President promised to read a paper on "Disinfectants." After appointing Mr. Sharples to the chair for the ensuing evening, the meeting terminated.

BRISTOL PHARMACEUTICAL ASSOCIATION.

A general meeting was held on November 12, 1869, at the Philosophical Institution; Mr. STODDART, President, in the chair.

The Hon. Sec. announced that the systematic courses of lectures on chemistry and botany were now in full operation, and that the number of students attending them was forty-two.

He also announced that the next general meeting of the Association would be held on the 10th of December, when a lecture would be delivered by W. Coomber, Esq., F.C.S., on "Some of the Principles of Electricity, illustrated by Experiments drawn from Domestic Resources."

The President, Mr. STODDART, then read the following address:—

Gentlemen,—Before commencing the usual address of a president, suffer me to thank you most cordially for the confidence you have shown by placing me in that position; and I venture to ask a still further mark of your kindness by the continuance of your interest in, and giving your resolute support to, the work we inaugurate this evening, viz., the Bristol Pharmaceutical Association. To every right-thinking man, it is not the mere performance of a duty only, but a great pleasure to do all in his power to advance the education of his younger brethren who are entrusted to his care, and who naturally look up to him for guidance and friendly assistance. The successful progress of our association greatly depends on your hearty co-operation and regularity of meeting and although sometimes it may be a little self-denial, yet do not hesitate. Our young friends will more readily judge of the sincerity of your opinions by the constancy of your attendance, and the enthusiasm shown in the support of an object so good and so eminently useful. "Longum iter est per præcepta, breve et efficax per exempla." At the present day we are in a position so different from that taken at all former periods, that to stand still would be most apathetic and suicidal. We are, as it were, compelled to raise our mental status, and I look forward to the day when the medical man will not have cause to regard our calling with an eye of jealousy, but with a feeling of friendship look to us as auxiliaries to the success of his professional endeavours. I believe the time is fast approaching when the physician will more and more confine his attention to the study of therapeutics only, and rely on our more practical experience in pharmacy proper. By this means we should most certainly dispel the mists with which many of our remedial agents are now surrounded. Nor do I value the successful prosecution of our little society for only the mere knowledge acquired, but fondly hope and trust that it will form a bond of union and forge a link of good-fellowship such as we never felt before. We shall know and trust each other better. and by happy experience speak of a man as we find him. Do you ask for an example? If so, I would point to our annual Pharmaceutical Conference, which I would remark, *en passant*, is a thing of itself, supporting itself, relying upon itself, and in no way belonging to or dependent upon the Pharmaceutical Society. By sheer dint of perseverance and energy it has grown and prospered. Not one single town can be mentioned in which its meetings have been held that cannot tell of a kindly feeling left behind, which before the visit never existed, of wholesome scientific desires called into play, and of petty envies and jealousies buried in oblivion. I should wonder if even freemasonry were a stronger bond of union than that which arises from the mutual experience of intellectual pursuits. At all events let us try and follow the example; let us not grow cold on our newly-raised hopes; and if that incentive prove too selfish, let us bring in a philanthropic spirit, and endeavour to do for our young men what was never done, or could have been done for us in our early days. For years past we have rested on our oars, and have rather let things take their own course, our only aim being to get a good business together, or the best possible return for our outlay, and then leaving our successors to do the same in their turn. Times are now happily changed, and as you are aware, the status of our profession is placed in a much higher position than before. It is now recognized by Government (and not one minute too soon) as a department peculiar in its obligations, and scientific in its attainments, so that if we be true to ourselves, we shall presently find a plentiful return for our venture, and a higher consideration for our increased responsibility. It is now that we must cry "Onward!" for it is a point of true honour that we pharmaceutists maintain the position allotted to us with unwearied perseverance and unflinching integrity. I congratulate you, gentlemen, on the hearty response you have unanimously made to the late call upon your good feeling and purses. It is rarely that the sons of good old Bristol are found wanting when duty calls or a praiseworthy deed is suggested. We have, and I say it advisedly, as good a school of pharmacy as any provincial city in the kingdom. It comprises a course of more than sixty lectures on inorganic and organic chemistry, and another sixty on structural and systematic botany in the one winter session. These are, as you know, given by men well known to be competent to their tasks. In the name of you all, I most sincerely thank these lecturers for their very generous acceptance of our proposals and the marked interest they have evinced in the welfare and success of our young associates. We have at the present time upwards of forty-two students, all apparently bent on steady work, and having a hearty determination to go in and win. I must, however, express my deep regret at the small proportion of assistants who have joined us, but hope the good example set by the few will leaven the whole mass, so that, if spared for another session, we may have an opportunity of welcoming a much larger number. Your committee look forward with confidence and pleasure to the future of our young students. "Carefulness, perseverance, and accuracy" must be their future motto, as it is of every good pharmaceutist.

But, gentlemen, while preaching to others, let us not forget ourselves. I am conscious that I am addressing many older and more experienced than myself, and therefore am open to the charge of boldness, when I give them advice, but hope for forgiveness if I tread on unwelcome ground. I would ask, is it much less than criminal for a man in the prime of life and full of energy, to be idle? When we have finished what we desire so much,—a hard day's work; does it do one tittle of good, either to mind or body, if we sit down and, in common language, "take it easy"? By no means is this the case; our business hours over, the enjoyment of a microscope, or a pleasant search through a select but useful little library for the explanation of the thousand-and-one phenomena that too often pass by unheeded, will prove a source of relaxation at once the most healthy and interesting. I cannot conceive any one to be less orderly or exact, less economical or quick, if he have a knowledge of the rationale of a decomposition, rather than blindly working by the "rule of thumb." My friends, believe me when I say that the mental wear and tear of a long series of years, is much less, when accompanied with an intellectual delight, than when simply borne with what I should imagine was the feeling of a criminal at the treadmill, working out his allotted *quantum* of toil,—

"The sweat of industry would dry and die,
But for the end it works to."

I would far rather look to the future,—circumscribe our hours of business and work while it is day. We should do our dispensing better, please our customers better, and preserve our health better. Let us take an example or two of what passes before us every day of our life. A very old and familiar friend on our shelves is the aqua lauro-cerasi or cherry-laurel water, and it is astonishing how few know from what tree this uncertain medicine is distilled, and still fewer are aware that it is no true laurel at all, not even belonging to the laurel tribe, but more nearly related to the rose. Castor oil, again, is a medicament, perhaps of all things the one most frequently handled and sold. Whilst weighing out this nauseous but useful article, did it ever occur to the Bristol Pharmaceutist, that just a century ago, a Bath physician introduced it and prescribed it as a new agent in conjunction with the Bath waters? Within the last few years we have had the Italian variety, free from smell and taste. I dare say every druggist in the kingdom has it in stock; but how few know what constitutes the difference—that the simple process of decortication and pressure, without great heat, deprives the oil of the acrid, nauseous principle, without decreasing its aperient qualities! or how few are aware that the castor-oil plant belongs to the Order which includes the deadly *Euphorbium* and the nutritious tapioca! On our shelves we have rows of essential oils, which have each a different and characteristic appearance when viewed with oblique light, and which we have observed hundreds of times without troubling or caring to inquire why. How many are there that can explain the cause of the wondrous and ghastly blue that we see in every bottle of quinine mixture that we dispense, and which appears in sunlight rather than candlelight? Now, if the slightest bit of curiosity had prompted us to inquire the reason of all these phenomena, we should have been led into the consideration of some of the most exquisite facts of physical science. I must not, however, take up your time longer by giving examples of what must occur to the minds of all, but would again ask if the addition of a little knowledge would not invest our mere trading employment with interest and delight, even if we had no higher motive? It is for the elimination and enlargement of our ideas that we form an association such as that we now inaugurate, and for which we, one and all, wish God speed. Only let me persuade you to try my advice, and I feel confident that none will repent the experiment. Of all professions, none equals ours in points of interest,—it only wants the will to explore and the mind to unravel. In the words of a favourite poet, though originally alluding to another matter:—

> "I do not know; nor will I vainly question
> Those pages of the mystic book which holds
> The story still untold;
> But without rash conjecture or suggestion,
> Turn its last leaves in reverence and goodheed,
> Until the end I read.

In such a spirit would I direct your inquiry, and sow the seeds for a rich harvest of knowledge. But I fancy I hear some of my valued Pharmaceutist forerunners crying out, as I have often heard in reality, Hold! hold! business before pleasure, if you please. Well, be it so; nevertheless, I cannot conceive that I should be one bit less a man of business, if I pursued the retail drudgery with a little zest to lighten the toil, or dispense a prescription any the worse because, by knowing the properties of the ingredients, I avoided a result which may trouble both the dispenser and the patient by variation in taste and colour. A scientific knowledge of the properties of drugs and chemicals will enable you to produce compounds in the best possible condition for promoting the therapeutic wishes of the physician; will gain his goodwill on the one side, and, by being correct, conscientious, honest, and truthful, obtain the implicit confidence of the patient on the other. Hardly a day passes without chemistry proper coming in to our assistance, either in some unexpected complexity, or to answer the questions of some anxious inquirer. Without such an aid, how could we tell if our goods were not the product of some dishonest adulteration, except by mere guess-work? Far be it from me to recommend vain ostentation, or to elevate one's ideas above the proper level; on the contrary, I would rather cultivate a humble, persevering spirit,—always striving to do all things well, and to use the best means in our power for the alleviation of suffering and disease, and to see that all the articles of Materia Medica in our establishments are up to the proper standard. It is possible, I admit, that a man may conduct a prosperous business without any regard to the principles of science or even morality; but I contend that the man of integrity and industry, combined with a fair amount of knowledge, will always be the one most certain to succeed. I cannot imagine the feelings of a Pharmaceutist the height of whose ambition is that of a trader only. Thanks to the Pharmacy Act, such a state of things can scarcely be in the future.

In conclusion, allow me once more to exhort you all to be up and at work. Let us not flag in the continuance of well-doing, even if now and then it should prove a little self-sacrifice. If you do nothing more, show, by your presence here (it is only once a month) that you approve the efforts made for the advancement of Pharmacy.

Gentlemen, in all sincerity, I thank you again for the honour you have paid me, and I wish from my heart that success, prosperity, and happiness may be yours in return.

GLASGOW CHEMISTS AND DRUGGISTS' ASSOCIATION.

Session 1869–70.

The Annual General Meeting of this Association was held in the Mechanics' Institution, Bath Street, on the evening of Thursday, the 28th October, 1869; Mr. Kinninmont, the retiring President, presiding during the early part of the proceedings. There was a numerous attendance. The Secretary, Mr. T. D. Moffat, on being called upon, read the following report for Session 1868–69:—

"In glancing back on the past session, the first remarkable circumstance to be noticed is the great addition of members to the Association, which has now reached the unprecedented number of one hundred and eight, twenty-seven of whom are employers. This great increase is doubtless, in no small measure, due to the indefatigable energy of our respected treasurer, Mr. M'Adam, who has, in every respect, more than fulfilled the expectation entertained of his aptitude for that office.

"The Pharmacy Act has perhaps scarcely had time to make its influence felt, except in the necessity for study by those who have to pass the examination; but the Secretary may take this opportunity of stating that the efficiency of the members of this Association has been the subject of remark by the examiners.

"The lecture delivered by Mr. John Mackay, of Edinburgh, on the Pharmacy Act, the spirited discussion, and the amusing 'heckling,' will long be remembered by the large audience, as one of the foremost events of the pharmaceutical year.

"The various papers read by the members during the session were characterized by that evidence of practical knowledge and lucidity of explanation which we have so long been accustomed to in the Association, but it is a matter for regret that the younger members did not generally contribute.

"The *soirée* seemed to have lost its former popularity, for while on former occasions it was a source of revenue, it was last year, financially considered, a bad speculation.

"The practical chemistry class in connection with the Association was highly successful, and Dr. Moffat speaks in high terms of the students.

"Taken altogether, the session of 1868–69 may be considered to have been above the average of former years."

The Treasurer's report was then submitted, which showed the Association to be in a very flourishing condition financially, the credit balance (£4. 5*s*. 7½*d*.) being much larger than it has been for many years.

On the motion of the Chairman, both reports were adopted.

The following office-bearers were then elected for the ensuing session, viz.—*President*, Mr. John M'Millan; *Vice-President*, Mr. Archibald Paterson; *Secretary*, Mr. J. M. Fairlie; *Treasurer*, Mr. T. D. Cassells.

Votes of thanks having been awarded the retiring office-bearers, the President (Mr. M'Millan) intimated that arrangements were being made with Dr. R. C. Moffat for a special course of lectures on chemistry, to be delivered during the session, and that probably some other celebrities would also be brought forward. Members who intended giving papers during the session having been requested to hand in their names to the Secretary as early as possible, so as to enable him to have the syllabus printed and distributed in due course, the proceedings terminated.

The Second Meeting of the session of this Association, was held on Thursday evening, 11th of November, in the Mechanics' Institution, Bath Street; Mr. John M'Millan, President, in the chair. The attendance was very large, the principals connected with the profession being well represented.

The minutes of last meeting having been read and adopted, the Chairman introduced Dr. Carter Moffat, who, in his usual attractive manner, delivered the first of his special course of lectures; the subject on this occasion was the Chemistry of Combustion, which was rendered highly interesting by the performance of several beautiful experiments, illustrative of both slow and silent and noisy and rapid combustion. The lecturer was frequently applauded, and at the close received a hearty vote of thanks. The Secretary then read the following intimation, "That the President will give one guinea as a prize for the best essay on the 'Officinal preparations of Iron' by a member under 23 years of age. Essays to be sent to the Secretary, signed by a motto, and accompanied by a closed envelope containing address of writer, before 1st March, 1870. Messrs. Kinninmont and T. D. Moffat, President, Vice-President, and Secretary, to be examiners of essays." The meeting then closed.

LEEDS CHEMISTS' ASSOCIATION.

The Seventh Annual Meeting of the Association was held at the Church Institute on October 13th, 1869; the President, Mr. R. REYNOLDS, in the chair.

Mr. Day was elected a member, and Messrs. Millard, Powell, and Taylor, were elected associates.

The Hon. Secretary, Mr. YEWDALL, read the annual report of the Committee. This was of a satisfactory character, and announced the addition of ten new members and nine associates during the year, although some losses had been sustained by death or removal. Numerous additions to the library were reported; and this important feature in the operations of the Association had been much more extensively used by the associates since its removal to a more central position in the town, where a comfortably warmed and lighted room is open every evening from eight to ten o'clock. During the past summer, a member of the Association, Mr. James Abbott, delivered a course of twenty-six lectures upon botany. Twenty-three tickets were issued for these lectures, which were given at seven o'clock in the morning. The Association had, as in former years, advised its associates to attend the courses of lectures on chemistry, delivered by Mr. G. Ward, F.C.S., at the Mechanics' Institute. Twenty-five students had so entered. The report recapitulated the subjects introduced at the monthly meetings of the Association.

The Treasurer's account showed an income for the year of £23. 15*s*. by ordinary subscriptions, and £8 by a special subscription in aid of the library. The following were some items of expenditure, viz. rent, £9. 13*s*. 10*d*.; books and periodicals, £8. 10*s*. 4*d*.; printing, stationery, etc., including Mr. Harvey's address, reports of meetings, rules, etc., £11. 3*s*. 10*d*. The balance due to the secretary was £5. 16*s*. The report and accounts were adopted.

The committee recommended the associates desirous of improving their knowledge of Latin, to enter the class on that subject at the Church Institute, and promised to commence a special class for reading prescriptions whenever there was a sufficient number of applicants.

The ballot for officers for 1869–70 was then taken, with the following result:—President, Mr. William Smeeton; Treasurer, Mr. Land; Hon. Librarian, Mr. R. M. Atkinson; Hon. Curator, Mr. Payne; Hon. Secretary, Mr. E. Yewdall; Committee, Messrs. Atkinson, Horsfield, Jefferson, Reynolds, Roberts, and S. Taylor.

The President Elect, Mr. W. SMEETON, having taken the chair, proceeded to give an address. He referred to the probable results of recent legislation, as the topic which must for some time have the chief interest at all gatherings of chemists. The position of Leeds in the educational statistics, published by Mr. Schacht, was a subject for congratulation, and it behoved assistants, who now have these opportunities for improvement, to use them, lest by removal into another town, possibly accompanied by longer hours of business, they would find themselves less favourably situated. Surely there was no hardship in the compulsory education which now faced the chemist's assistant; and if this led him to habits of reading and scientific research, the result would be a wealth of pleasure of which nothing could deprive him, and which would richly compensate for any self-denial involved. Moreover, such cultivation of the mind was required by every one of them as a safeguard against the narrowing influences of mere buying and selling; for when the mind was left to these alone, it lost many of its better qualities. It was possible to appreciate the advantages of knowledge, without forgetting purely material considerations. Admitting the fact that our business was an ill-paid one, we had the right to expect that an improvement was setting in both for master and man. For the latter, there was already a change in the right direction, since salaries had unquestionably advanced, and as compared with twenty years since, to a very great extent. Some assistants had complained that employers did not recognize the superior value of their superior education. For himself, he could answer that in the selection of assistants, he was much influenced by the consideration, that those who had passed an examination and received a certificate of a competent knowledge of their duties, were the most likely to prove valuable assistants.

Mr. SMEETON spoke of the agreement as to prices of medicines adopted in Edinburgh and other places, and expressed the opinion that a similar arrangement could be carried out in Leeds.

The cordial thanks of the meeting were voted to the President for his address.

The Second Meeting of the session was held on Wednesday, November 17, 1869. The President, Mr. SMEETON, in the chair.

The minutes of last meeting having been read and confirmed, Mr. E. THOMPSON explained that he had no paper to read, having been called upon to occupy the meeting under exceptional circumstances, and at very short notice. Considering the many useful and valuable inventions which have been made during the last few years for obtaining accurate results in the sciences of meteorology, optics, electricity, etc., he, Mr. Thompson, thought a description of some of these instruments might appropriately occupy an evening during each session, and as it would not be possible to elucidate more than one subject to-night, he proposed to take meteorology. With the aid of several instruments kindly lent by Messrs. Harvey, Reynolds, and Co., the lecturer described the construction and use of the old wheel-barometer, also Fitzroy's, the aneroid, and standard barometers, self-registering maximum and minimum thermometers, hygrometers, etc.

At the close of the lecture a hearty vote of thanks was given to Mr. Thompson.

LIVERPOOL CHEMISTS' ASSOCIATION.

First General Meeting, held at the Royal Institution, October 14th, 1869; the newly-elected President, Mr. J. Abraham, in the chair.

Messrs. C. Blood, J. Hargreaves, C. H. Lancaster, A. H. Saunders, and J. T. Wood were elected members.

The SECRETARY announced various donations made during the recess, consisting of the 'Pharmaceutical Journal,' the 'Chemist and Druggist,' the 'New York Druggists' Circular,' and the 'Proceedings of Liverpool Scientific Societies.'

A discussion arose with regard to the supply of refreshments at the general meetings, and ultimately the question was referred to the Council.

The PRESIDENT delivered his opening address.

This evening commences the twenty-first session of the proceedings of the Society, and, after the lapse of years, I am again called to address you from this chair. The occasion may excuse a few historical reminiscences, which, I hope, may not be uninteresting. The Society was an early offshoot from the Pharmaceutical Society of Great Britain, which was not at that time as it is now, the depository of the legal provisions for regulating the practice of pharmacy in this island. It had for its objects the "better education, mental improvement, and general advancement of the interests of chemists and druggists in co-operation with the Pharmaceutical Society." It has contributed its mite to the progress which, since that time, has been apparent, I believe, to all who have been conversant with the subject; and, although it has arrived at the age of manhood, it has not, I hope, reached that of decrepitude. And yet, when I reflect upon the abilities and labours of those who ministered to its wants in its early history, and consider who remain to carry on the work, I may be excused for expressing a hope that some who have not yet been prominent among us may come forward to distinguish themselves in efforts to be useful to the Society. More than one of our earliest and best friends are no longer of this world. One of these was Dr. Jos. Dickinson, F.R.S., one of our most distinguished physicians, who, when pressed with the cares of a large practice, found time to attend early in the morning at the Botanical Gardens to give instruction gratuitously to all the members who chose to attend him. He was one of the ablest as well as the most benevolent of the men who have tried to raise others to their own level. Dr. Richard Brett was one of our earliest lecturers, and his name is connected with the history of two substances which have since obtained universal use in pharmacy. About thirty years ago, when Dr. Brett was Chemist to the then Liverpool Apothecaries' Company, he made some experiments—I believe at the suggestion of Dr. Richard Formby, of Liverpool, a Fellow of the Royal College of Physicians—on the products of the distillation of chlorinated lime with spirit of wine. Such experiments had previously been made both in the United States and on the Continent, but the products had not come into general use. A liquid was obtained which was introduced into medical practice by Dr. Formby under its previous name of *Chloric ether*, a name which had also been applied to chloroform. Its use gradually spread; but an inquiry and answer, which may be found in the 'Pharmaceutical Journal' for March, 1844, show that it was very little known in London even at that time. Dr. Brett was quite aware that the name was incorrect, and, having separated the chloroform from its solution in spirit, he found that he could make a medicine of purer flavour by making pure chloroform, and then diluting it. Since that time many inquiries have been made for a chloric ether soluble in water; and some have supposed that the liquor drawn from the retort, and preserved without any attempt to isolate the chloroform, was a better preparation. I believe the fact to be that, just as the preparation under examination is weaker of its active principle, chloroform, it is more soluble in water. The strength which I have always used, and which I believe to have been the early standard, is one volume in sixteen. The preparation continued for some years to be prepared exclusively, I believe, in Liverpool. And here I must mention another of our earliest friends, Mr. David Waldie, who delivered the first lecture which was addressed to us. He succeeded to the office which had been previously held by Dr. Brett, and, using chloroform largely in the preparation of chloric ether, was very familiar with that now well-known, but then generally unknown, substance. How little was then generally known of it, although its composition had been accurately ascertained by Dumas in 1834, may be seen by reference to an "Historical Notice of the Chloride of Formyle, commonly called Chloric Ether, or Terchloride of Carbon," by the late Dr. Pereira, in the 'Pharmaceutical Journal' for March, 1846, in which the name "chloroforme" is identified with the names which I have quoted, together with that of chloride, or terchloride of formyle. Mr. Waldie, as I have said, being familiar with the properties of chloroform, was, some time after the introduction of ether into use as an anæsthetic, asked by the present Sir James Simpson if he could suggest anything more likely to answer the purpose. He suggested *chloroform*, and the distinguished Professor, always ready to seize upon any means of alleviating suffering, immediately tried it with a success of which I need say nothing. Sir James publicly acknowledged his indebtedness to Mr. Waldie for the suggestion, but I do not think his merit in the introduction of this most valuable substance is so generally known as it should be. We still number him amongst our honorary members, though he has been long absent from us, dwelling in Calcutta. How pleasant it would be to see his face again! The application of chloroform to the purpose in question took place, I think, in 1847, and at that time the only place in which it was manufactured for commercial purposes was Liverpool. A large demand quickly arose, which the Liverpool makers could hardly supply, and some of the excellent pharmaceutical establishments in Edinburgh began to make it, and soon carried the process to perfection. They had a material advantage over their rivals in England, by reason of the fact that the duty upon spirit used in England was then much higher than in Scotland. This gave the Edinburgh manufacturers a vantage ground, and in the manufacture of this article they have preserved a foremost position to the present time after the duty has been equalized.

Our first Secretary was Dr. Edwards, and his services as Teacher of Pharmacy, President, and a frequent lecturer, extended over a long period; and, although he is far from us, he is fresh in the memory of many who accompany him with their good wishes in Montreal. His genial sociality endeared him to all, and the profuse expenditure with which he provided brilliant illustrations for his lectures make his absence much felt. Amongst our earliest lecturers were Drs. Inman and Nevins, and Professor Hamilton (our first teacher of Pharmacy). Although these notes have no pretension to historical completeness, I think I ought to remind you of our frequent indebtedness at later periods to Dr. Cuthbert Collingwood, Professor T. C. Archer, and our former President, Mr. H. Sugden Evans, now President of the Pharmaceutical Society of Great Britain, and to Mr. Nathan Mercer, of Montreal.

The British Association will meet in Liverpool in the summer of next year, and this Society, which joined in the invitation, which they accepted, will be expected to share in the preparations for their reception. Another Society, however, which has always met in the same towns, and nearly at the same times, as those selected by the former and more important Society, will meet at the beginning of the week in which the British Association assembles, and its special relation to most of us will, I hope, command for it and its members our best efforts to promote its objects, and give to its members an hospitable reception,—I refer to the British Pharmaceutical Conference, which was established in Newcastle-on-Tyne in 1863, and has just held its sixth meeting at Exeter, where many valuable papers were read, and opportunities afforded to the pharmacists of the kingdom to make those contributions to the common stock of knowledge which our opportunities enable us to afford, and which the members of a liberal profession should supply. Such an Association has for many years existed in the United States, to the general advantage of the members. The subscription to ours is only five shillings per annum, and, besides the privilege of attending the meetings, and promoting a useful work, the members receive a small volume reporting its proceedings, and will, in succeeding years, receive a 'Yearbook of Pharmacy.' One of the subjects discussed at its recent meeting was that of prices. It is very important that the true grounds on which our charges for our services and for our goods should be made, should be well understood and followed.

Upon the whole, I think we may assume that our special art and science is improving, and obtaining every year, in the estimation of the public, a higher position and a more just appreciation. I believe that this advance will mainly be exactly proportionate to the ability and conscientiousness with which we devote ourselves to our proper duties; and, I believe, the more we make it felt that it is by us that the dispensing of medicines is best performed, the more exclusively will the labour and profit fall to us. As long as medical men look upon us as rivals, they will not regard us with much favour, the more especially as it cannot be denied that, for their proper duties, they have a qualification which we have not.

The division of duties amongst the members of the medical profession does not seem to be very clear, nor very settled, but one thing all agree in, and that is, that the dispensing of medicines should, as a rule, be confined to a class specially educated and devoted to it, and who do not practise it as a subordinate and troublesome duty,—that class are called Chemists and Druggists and Pharmaceutical Chemists; the latter are also called Pharmaceutists and Pharmacists. I should prefer as briefer and more convenient, the name PHARMIST, which I formerly used at the suggestion of my friend Mr. Thomas Dorning Hibbert, of the Middle Temple, although the word Apothecary, as usually understood, is our proper designation. In Ireland the dispensers of medicine are still called Apothecaries, and the privilege of compounding prescriptions is by law confined to them; so that those who are qualified in England are not qualified in Ireland, and in a province of the same government, confessedly the poorer of the two, the education of the Pharmist includes surgery, medicine, and anatomy, which, in the remaining provinces of the empire, are not deemed necessary. This is a most anomalous state of things, and a remedy is urgently demanded.

The imperial system of weights and measures now in use was established in 1826, long after the introduction into France of the metrical system, which no doubt received the consideration which was then thought to be due to it; although, however, it is evident that changes in the standards should as much as possible be avoided, a strong feeling has long existed in this country in favour of a decimal system, and, secondly, in favour of the French metrical system.

The second Report of the Standards Commission has just been published. The Commissioners do not directly state so, but I understand them to be of opinion that the

French system of weights and measures should be adopted as the system of this country. They express themselves, however, as sensible of the great difficulties in the way of its early universal use, and they say that some evidence "tends to prove that the existing system meets the popular wants," and will not be easily expelled from popular use. They recommend that metric standards shall be provided by the local authorities for the use of the inspectors, and that the French names shall be applied to them; they also recommend an international and decimal currency.

In conclusion, I beg to express my hope that the Society may have a prosperous Session, and that the meetings may be well attended, and, especially, I hope that every member who can spare the time will attend the lectures by Mr. Davies, for I believe that there is not one who will not find it a pleasure and advantage to do so.

A vote of thanks was moved by Mr. Tate, F.C.S., and seconded by Mr. Sharp, and, after some discussion on the topics of the address, was carried by acclamation.

Second General Meeting, held October 28th, 1869; the President in the chair. He informed the meeting that the Council were unanimously of opinion that tea and coffee should continue to be provided at the meetings of the Association.

The Secretary announced donations of 'Chemistry,' by Professor Attfield, presented by the author, and another copy of the same work presented by the President. A vote of thanks was passed to the donors.

The President exhibited a sample of chloral, and described its use as an anæsthetic.

Dr. Carter said that the dose proposed was much too small. A friend of his had given it in doses of 80 grains to a dram, in delirium tremens and other diseases, but had found it rather uncertain in its effect.

Mr. A. Norman Tate, F.C.S., then read the paper for the evening, on "The Examination of Petroleum," with some remarks on petroleum accidents.

This paper first called attention to the discrepancies which at present exist in the results obtained by the different operators with the apparatus defined by the Petroleum Act, 1868.

The shape and size of the apparatus, as the author interpreted the Act, was first described and illustrated by means of an apparatus specially made according to the author's directions by Mr. Anthony Casartelli, of Castle Street, Liverpool.

Attention was particularly directed to the thermometer ordered to be used, Mr. Tate remarking that many of these instruments were very inaccurate, and frequently the cause of variance in the results of the tests. He preferred, instead of the *round* bulb ordered by the Petroleum Act, that it should be drawn out in an elongated form, as he found practically that thermometers so made were as a rule more sensitive.

The flame to be used under the outer or heater vessel, he said, should be that of a small spirit lamp, which would cause the temperature of the oil to rise at the rate of about one degree per minute. When the test was completed more rapidly, he (Mr. Tate) has found that the results were incorrect, and that the thermometer indicated a lower temperature than that preserved by the top layer of the oil from which the vapour was evolved. He said that the bulb of the thermometer should be placed only just below the surface of the oil, and not one and a half inches below, as indicated by the Act.

He further remarked that, having examined most of the importations of petroleum burning oil into Liverpool during the last few months, he was able to say that the "flashing-point" was higher than formerly, but yet so near 100° F., although above that point, that it was necessary that very great care should be exercised in testing them, so that no vexatious proceedings on the one hand should be taken to unnecessarily interfere with trade; and on the other, that perfect safety of the oil should be ensured, so as to properly protect the public.

He thought that it was to be regretted that persons not acquainted with mineral oils, and not familiar with testing operations, should be those appointed under the Act to sample and test petroleum, and commence prosecutions. The directions of the Act required to be much more complete and explicit before inexperienced persons could undertake the test with a certainty of correct results. Yet the test was one which any intelligent man could perform after a little practice, if distinct and definite instructions were first given him. Mr. Tate feared that such necessary instructions were not given at present, and mentioned some cases in which prosecutions had taken place when the oil was really not liable to the provisions of the Act.

He next gave the results of his testing of nine samples of oil procured in different parts of Liverpool; one of them flashing at 100° F., five above that point, and three below it.

He also called attention to the flashing-point of ordinary spirits—gin, rum, brandy, etc., and pointed out that, although these were more inflammable, no legal enactments regulated their storage or sale in a manner such as regulates petroleum.

Some suggestions for the extinction of fires caused by mineral oils were next given.

Mr. Tate did not recommend the Government test as scientifically accurate, but simply looked upon it as a test made legal by Act of Parliament, which analysts must use in the best manner possible, consistent with the instructions laid down by the Legislature.

The **President** agreed with Mr. Tate with regard to the importance of having thermometers uniform in size and shape, and suggested that one with an elongated bulb would have the advantage of being more delicate, and also of showing the average temperature of the mass of oil.

Mr. J. F. **Robinson** said that he had had to make many examinations of petroleum oil, and had met with many discrepancies in the tests, which he believed to be due to the thermometers used. He would like to have a Government inspector in all large places, who should test the oil and give a certificate.

Mr. **Murphy**, F.C.S., said that the subject had been a favourite one with the Association, and he regretted that Government should have adopted the test described in the Act, as he regarded it as thoroughly unreliable, and one which could not possibly give correct results.

Mr. **Bird** spoke of the importance of gradual heating to avoid a great difference between the temperature of the heating medium and the oil. Draughts should also be carefully guarded against.

The **Secretary** thought Mr. Murphy's strictures on the process of testing were beside the question, as it only professed to give an arbitrary indication of what might legally be stored.

Mr. **Samuel** gave the result of tests of oils, made in England and America, which differed several degrees, the American test being sometimes higher and sometimes lower than that made on the same oil in this country. He used as a light for testing, a little asbestos put in a pencil case and dipped in a little oil.

Mr. **Murphy** proposed a vote of thanks to Mr. Tate, which was at once carried by acclamation.

MANCHESTER CHEMISTS AND DRUGGISTS' ASSOCIATION.

The first monthly meeting of the Session was held in the Memorial Hall, Albert Square, on Friday evening, Nov. 5th; Mr. Councillor **Brown**, Vice-President, in the chair. One new Member and two Associates having been elected,

Mr. **Alexander Somers**, Professor of Materia Medica at the Royal School of Medicine and at Owens College, delivered a most interesting lecture on "Baths and Bathing in Ancient and Modern Times." At its conclusion a hearty vote of thanks, proposed by Mr. Slugg and seconded by Mr. Hampson, was passed,—both proposer and seconder expressing the hope that Mr. Somers and other members of the medical profession would honour the monthly meetings with their presence.

It was announced that at the next meeting, to be held December 3rd, at 3 P.M., Mr. Hampson would read a paper "On the Condition and Prospects of Pharmacy in its Relation to the Medical Profession."

Tea and coffee will in future be served at the evening meetings.

NOTTINGHAM AND NOTTS CHEMISTS' ASSOCIATION, SECOND SESSION, 1869–70.

The first meeting of the Session was held at the Exchange Rooms, on Friday evening, October 29; the **President** (Mr. P. H. Atherton) in the chair.

The **Secretary** (Mr. Fitzhugh) having announced the donations to the Society since the last meeting, and other preliminary business being settled, The PRESIDENT delivered the prizes offered by the Council and himself, to those of the Associates who had shown the greatest proficiency at the Latin class.

The PRESIDENT then delivered the Inaugural Address of the Session. After congratulating the members on the success of their efforts during the last Session, and pointing out the difficulties which beset their path, and the best means of overcoming them, he made a strong appeal to the members to support the efforts of the Council, and, more especially with regard to the attendance at the evening meetings, deprecating a prevailing opinion in many provincial Societies, that their obligations ceased with the payment of the yearly subscription. He then dwelt at some length on the importance of provincial educational associations; and reviewed the means by which such education could be obtained, referring to the unsatisfactory nature of the existing Chemistry Lectures in the town, in connection with the Science and Art Department, and, expressing a belief that lessons or lectures, by properly examined pharmaceutists, would be found the most effective.

Various subjects of interest to chemists—legally, socially, and morally—were then reviewed, including the general operations of the Pharmacy Act:—The stimulus given to the technical education of the trade; the illegal registration of unqualified men; the new arrangements for the preliminary examination of Students; the great usefulness of the Pharmaceutical Conference in promoting the cause of Pharmacy; the inadequate remuneration for the important work of dispensing; the moral influence of local Societies in promoting useful reforms.

The PRESIDENT concluded his address by impressing on his hearers the means by which the interests of the Society could be furthered. Firstly, for the Associates; secondly, by the Members; thirdly, by the chemists throughout the county; fourthly, as a Society; and laid before the members a carefully considered scheme for giving the Society a firm and solid foundation, which, by the united assistance of the chemists in town and country, would enable them to establish lectures and classes for providing a systematic course of study; to establish a good library and museum, and, by means of delegates from the smaller towns in the county, to know and provide for their wants, and thus extend the usefulness of the Society throughout the whole district; which, without some such effort on their part, would be unable to give their juniors the amount of training necessary for their examinations and improved educational position. He (the President) urged upon the Members the necessity of sinking all personal feelings, to unite in promoting the cause of elevation and education for which the Society was established.

After some discussion on the various subjects mentioned, a hearty vote of thanks was given to the President for the very interesting and instructive Address he had given.

SCARBOROUGH.

A movement being on foot in Scarborough for promoting a half-day holiday on Friday during the winter months, the chemists met together on Monday night, November 15th, and after discussing the matter, unanimously agreed to the following circular, viz.

"*Half-day Holiday.*—The chemists and druggists beg respectfully to intimate to the public, that from the present date to May 1st, their respective establishments will be closed each Friday, at 2 P.M., the doors being reopened at 6 P.M. for the accommodation of their customers. They have also *unanimously* agreed to close their shops during the winter at 7 P.M., Saturdays excepted.—*November 16th*, 1869."

This is the first occasion on which the chemists of the town have met; the experiment was very successful, almost every member of the trade responding. A most cordial feeling prevailed, and it is intended to form a local Association, to be shortly inaugurated by a dinner. A great wish was also manifested that steps should be taken to assist the apprentices and young men in their efforts to prepare for the necessary examinations.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL ASSOCIATION.

On Wednesday evening, November 10th, the first lecture of the session was delivered before the Sheffield Pharmaceutical and Chemical Association by Mr. H. C. Sorby, F.R S.

The subject was "The Application of the Spectrum Microscope to the Detection of Adulterations." The lecturer first gave a general account of the principles involved in this particular kind of spectrum analysis, which differ entirely from those in the case of incandescent vapours.

When any substance used as an adulterative gives a spectrum with one or more well-marked absorption bands, it is often very easy to detect it when mixed with others. Thus, for example, some of the aniline colours or cochineal may be easily recognized when added to various syrups or tinctures to increase or improve the naturally defective tint.

In many cases, however, it would not be possible to adopt such a simple method, and it is therefore requisite to more or less perfectly separate the suspected substance from the main mass of coloured solution. As an example of this, the lecturer described how, by means of ether, the colouring-matters of logwood or Brazil wood may be separated from dark-coloured wines adulterated with them. When agitated with pure wine, the ether rises to the surface in an almost colourless state, whereas, when it contains either of the above-named substances, it is of a more or less deep yellow colour; and, after having been evaporated to dryness, the addition of a small quantity of bicarbonate of ammonia to the aqueous solution developes spectra which can be easily recognized as those of either the logwood or Brazil wood. Bisulphide of carbon and benzole may also be employed in a similar manner, with great advantage, to separate other colouring-matters from a large amount of such complicated mixtures as often present themselves for examination. By using the bisulphide we may easily separate the colour of red annatto from highly coloured cheese, and recognize it by the characteristic spectrum, or detect the colouring matter of carrots in butter.

Benzole is a most useful reagent in separating turmeric from rhubarb or other substances factitiously coloured by it, and the presence of an extremely minute quantity may be easily recognized by means of its powerful fluorescence when dissolved in that liquid. In conclusion the lecturer said that he had not in any way aimed at giving a complete account of the subject, for that would have been far too detailed and tedious for a general lecture, but had confined himself to a few of the more simple and striking cases, in order to illustrate the sort of methods which might be employed in such inquiries.

Mr. Wilson proposed a vote of thanks for Mr. Sorby's excellent lecture, which was seconded by Mr. Dobb and carried unanimously. Shortly after, the meeting broke up.

SUNDERLAND CHEMISTS' ASSOCIATION.

The second meeting of the above Association was held on Monday evening, November 8th, in the Athenæum, under the presidency of Mr. Harrison Thompson, to hear an address from Mr. Nicholson on structural botany. The lecturer, who was throughout listened to with very marked attention, explained minutely the leading principles of the science, and illustrated his remarks by means of diagrams and specimens of roots, leaves, etc., with which he had provided himself. He concluded his very able lecture by pointing out the direction which students of this science should pursue, and promised, at a future time, to offer further remarks on the subject. At the close, votes of thanks were accorded to the lecturer and the chairman. The next lecture under the auspices of the society is fixed for December 6th.

ORIGINAL AND EXTRACTED ARTICLES.

PHARMACY IN CANADA, 1869.

BY J. BAKER EDWARDS, PH.D., F.C.S.

The second annual reports of the two Canadian societies formed for the promotion of pharmaceutical science having just appeared almost simultaneously, a fitting opportunity is afforded of reviewing the general position of pharmacy in British America, and the efforts now being made to obtain restrictive legislation.

The first of these societies has assumed the somewhat ambitious title of the "Canadian Pharmaceutical Society." As, however, one of its leading objects was legislation, and this legislation could only extend to the upper province, it is obvious that the "Pharmaceutical Society of Ontario" would have been a more legitimate and correct title. I must, moreover, be allowed to express the feeling that the time-honoured titles "Pharmaceutical Society" and "Pharmaceutical Journal' have been fairly earned by our "Alma Mater," and that provincial societies would do well to show their originality by adopting some other designation for their associations. This remark also applies to the Bill which has been brought before the Ontario Legislature, and obtained a first reading. It is so closely a copy of the Pharmacy Act, that some of its provisions may not prove best adapted to the circumstances of thinly populated country districts. The Society proposes to undertake the work of education, and to fit up a laboratory, library, and museum; and its first year's class in chemistry has been very successful, about forty students having been enrolled, several of whom passed creditable examinations at the close of the session. It has also encouraged its country members by offering three prizes "for collections of indigenous medical substances of vegetable origin," competitors to be "MEMBERS OF THE PHARMACEUTICAL SOCIETY" (*sic!*). It has produced a useful monthly periodical, called the 'Canadian Pharmaceutical Journal,' which is, however, largely indebted to extracted matter. This has obtained a fair circulation.

The report does not give the number of members, but states that 129 were added during the year; from which we may assume the number to be from 300 to 350. These are principally country members, residing in the numerous small towns of Ontario. The prospects of this Society are very encouraging, and it will, no doubt, accomplish much good.

The constitution, aims, and resources of the Montreal Chemists' Association are modified by its circumstances; its members are almost entirely confined to this city, and it has a large number of Associate members. It has also undertaken the work of education, and has completed one session, during which a course of lectures on Materia Medica was delivered by Dr. Kollmyer, and on Chemistry by myself. About fifty practical students attended, with very satisfactory results.

The second year's courses are now about to commence, with an entry of about forty students. As these are all city *employés*, the number indicates a very general support. Our monthly meetings are also well attended, and practical subjects are brought forward and discussed.

In the matter of legislation we have prepared a Bill of a very simple character, which we expect to pass shortly. It constitutes a separate body, "The Quebec College of Pharmacy," for the purposes of registration, examination, and licensing graduates in pharmacy, and prohibits the sale to the public of certain poisons of a dangerous character, except by persons duly qualified and registered under the Act.

There is very little pure pharmacy among the French Canadians, the French druggists generally being qualified practitioners of medicine. The Bill, therefore, chiefly concerns the English-speaking population, and will encourage the establishment of pharmacies in market towns where few now exist. In the province of Quebec, the power of examination in pharmacy is now vested in the College of Physicians and Surgeons of Lower Canada, though few avail themselves of the privilege. The movement is looked upon favourably by leading members of the medical profession, and we trust the result will be for the advancement of pharmaceutical education and status in the province.

Of our friends in New Brunswick and Nova Scotia, we hear and see very little. The long distances and sparse populations render our intercourse with them very limited, even now that Confederation is an accomplished fact. It is to be regretted that the pharmaceutists of the Dominion cannot be enrolled into one body; but so long as all matters of education are in the hands of a divided provincial Legislature, this cannot be. The same difficulty is experienced in the States, and efforts are now being made there to assimilate the various State laws in reference to pharmacy. Every voluntary movement will assist towards general legislation, and we feel that the example of Great Britain will be most influential in placing pharmacy in its right position among all civilized communities.

EXCIPIENTS FOR PILLS.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—In the last number of the Journal, Mr. T. H. Hustwick expresses astonishment at my novel suggestion for making creasote pills with wax, and I may be allowed to express equal astonishment at *his* statement of results. But, notwithstanding his assertion to the contrary, I think I shall be able to prove the fallacy of his experiments, and my own justification for saying that *wax* is the best excipient for creasote in pills. But first a word or two on *wax*. Modern writers say very little about it except so far as relates to its external use, but Bartholomew Parr, M.D., F.R.S., in his 'Medical Dictionary,' 1809, gives some excellent directions for the internal use of wax, either in the form of emulsion or pills. He says, combined with soap, opium, or a few grains of Dover's powder, it is an excellent remedy for diarrhœa of long continuance; and it seems to have been in use so far back as the time of that eminent physician and botanist, Dioscorides, who gave it internally for healing and softening, as it supplies mucus in the bowels. Again he says, Poerner used *wax* in complaints of the bowels, combining it with water as an emulsion, but its union with soap *in pills* is preferable. If Mr. Hustwick's reasoning about turpentine being taken into the stomach to dissolve the wax applies, surely it would be as necessary to take spirits of wine after pills containing gum-resins, or dilute sulphuric acid after quinine pills, a proceeding *neither pleasant nor practicable.*

Mr. Hustwick, at the conclusion of his article in the Journal, says, "I have used *drops* instead of *minims*, believing that in such very small quantities the drop represents the minim near enough for all practical purposes." This is the most important error made by Mr. Hustwick, as I shall presently show. I must here observe that I am a prisoner (from the kick of a horse), and not being able to try experiments, my kind friend Mr. Hornsby has done them for me, with the following results. Ten *drops* of creasote carefully dropped from a ℥x stoppered round stock bottle, measured ♏vss, and *twenty* drops ♏xj; but if dropped from an ordinary ℥ss bottle, gtt.x measured only ♏ivss. Gtt.xx = ♏vj, gtt.xxx but ♏xiv. This is a great discrepancy; whilst the actual loss from a graduated minim *tube* is scarcely perceptible,—not more than *half* a minim in twenty. In testing Mr. Hustwick's formulæ, it must be understood that *minims* are used instead of *drops*. His recipe A will then require for twelve pills gr. xviij *more* of lycopodium, to produce a spongy, bulky mass, each pill weighing nearly 7½ grs., and in a short time will not bear the slightest pressure without crumbling; this experiment was repeated twice to test its accuracy. C, exact formula, unmanageable, and requires an extra gr. j of lycopodium to each pill; the creasote does not properly combine, but is diffused over the mortar, each pill weighed nearly gr. xj, and yielded up creasote on pressure; after awhile the pills became hard, brittle, and unsatisfactory,—tried *three* times with the same result. F could not be made but with gr. xxxvj lycopodium, and gr. xxiv pulv. trag. co. (12) large, soft, and unsatisfactory pills were made; and as to the relative value of absorbing power of liquorice powder and lycopodium, it is scarcely appreciable, as the following recipe will illustrate:—℞ creasoti ♏xij, pil. sapon. co. ʒss, pulv. glycyrrh. q. s. into twelve pills, which weighed 62 grains; whilst the same pills with lycopodium weighed 55 grs., and although seven grains lighter, they were slightly more bulky. Supposing pil. sapon. co. is not required, the following formulæ will make excellent pills:—

℞ Creasoti ♏xij.
Ceræ flav. gr. xvj.
Pulv. sapon. gr. viij. M. in pil. xij.

℞ Creasoti ♏xxiv.
Ceræ flav. ʒj.
Pulv. sapon. gr. x. M. in pil. xij.

Here you have two homogeneous masses, tested as to their solubility in the following manner:—5 grs. pepsine to 1 oz. water, and kept at a uniform temperature of 100° F. in a test-tube, readily disintegrates them. Suppose wax *alone* to be insoluble in the stomach (which Mr. Hustwick does not attempt to prove), it becomes *disintegrated*, as the following experiments will prove:—two aperient pills, having *three* thick coatings of wax, were taken at bedtime, and acted freely the following morning. In like manner two ordinary calomel and colocynth pills were coated, and produced their usual effect. Before concluding I would just observe that my own experience induces me to use *simple* instead of pulv. trag. co. as preferable for pills, and they do not become so hard unless the tragacanth is used in excess.

Bread is decidedly objectionable, it becomes hard and crumbly, and is always difficult to roll; it certainly gives *bulk* to the pills, but its stamina being of a spongy nature, liquorice powder will be found preferable. I am sorry to have occupied so much of your space, but I trust the introduction of a new excipient, capable of a much more extensive application than for creasote, will be a sufficient apology. From yours,

W. D. Savage.

PHYSIOLOGIC RESEARCHES AS TO CHLORODYNE.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—Your Journal is doing good by permitting a fair scientific examination of the physiological and other properties of chlorodyne. It is quite clear that if we have such a deadly addition as belladonna to the other toxic agents, such as hydrocyanic acid, morphia, Indian hemp, in one variety of chlorodyne, it is of vital importance the fact should be stated; for myself, having tried all three specimens pretty extensively, viz. that of Towle, Freeman, and of Davenport's, I have come to regard them all as equally valuable on some points, useless in others; two of them certainly free from belladonna, if not all. I think the profession, if guided honestly by medical journals and not self-interest in the advertising of proprietary medicines, should discountenance secret formulæ. We have deaths from chloroform and chlorodyne, because experienced men are not permitted in journals to give their ideas on the subject, and old routine or error holds sway. The public are much guided by the 'Pharmaceutical Journal' in things of pharmacy: chlorodyne in every shape is valuable, but one kind as to certain symptoms differs as much from the others, as crude opium from prussic acid, if not more.

I am, etc.,
CHARLES KIDD, M.D.

Sackville Street, November 14th.

NOTES AND ABSTRACTS IN CHEMISTRY AND PHARMACY.

BY C. H. WOOD, F.C.S.

The Purification of Bromide of Potassium.

MM. Robière et Herbelin have been engaged in examining a number of samples of bromide of potassium for iodine. The test they employ is to place several fragments of the bromide, moistened with water, upon a piece of glazed paper, and expose to a trace of bromine vapour. If iodine be present, the paper acquires a blue tint. The bromine vapour is poured from a little flask filled with asbestos, wetted with bromine water. When the quantity of iodine is great, the blue tint may be partially or completely masked by the brown tint of free iodine. To avoid this, the test may be modified as follows. A crystal of the bromide is pulverized and put in a watch-glass standing on a plate. A few drops of bromine are poured on the plate and the whole covered with a glass. The bromide is unchanged, if it is pure; or if it takes a slight yellow tint, it loses it very rapidly in the air. If it contains a sensible quantity of iodine, it becomes immediately brown, the iodine being displaced by the vapour of bromine. If it contains only minute traces of iodine insufficient to give a visible coloration, the salt is transferred to a corked tube and agitated with benzol. The liquid immediately assumes a rose tint easy to recognize.

To purify bromide of potassium completely from iodine, the authors recommend to dissolve the salt in a small quantity of water, and then add, little by little, bromine water to the solution, heated to boiling, until it is present in excess. The liquid is then boiled and evaporated to dryness with constant stirring. The bromide is thereby perfectly deprived of iodine. It is then crystallized.

It has been since pointed out that, in the foregoing tests for detecting traces of iodine, the results may in every case be masked by the presence of any excess of free bromine. M. Duingt writes that if we introduce a little chloroform (or benzol or sulphide of carbon) into a solution of bromide of potassium containing $\frac{1}{1000}$th part of iodide, and then add drop by drop, shaking after each addition, some dilute bromine water, we see the chloroform at first assume a violet tint, become decolorized by the next addition, and ultimately take a yellow colour when an excess has been employed. At this point, if the chloroformic liquid be decanted, and treated drop by drop with diluted sulphurous acid, it will reassume its violet colour. He recommends, therefore, that in testing bromide of potassium, after agitating a solution of the suspected salt with chloroform and some drops of bromine water, if no violet colour has been obtained, the chloroform should be separated and shaken with dilute sulphurous acid, added drop by drop, in order to restore the violet colour of the iodine if it is present.

Method of Preserving Drugs perfectly Dry.

M. A. Melsens directs attention to the circumstance that dried leaves, roots, herbs, flowers, and other drugs are often kept in drawers or places in which they are imperfectly protected from humidity. In damp weather or moist situations such substances absorb an appreciable amount of moisture. As a consequence they are apt to deteriorate in quality, losing their colour, acquiring a musty odour, or becoming mildewed. Even in establishments possessing a properly warmed store-room, it might, nevertheless, be of advantage to possess a simple means of preserving the contents of the shop-drawers in a state of perfect dryness.

The method which he suggests for this purpose is inexpensive and readily applied. It is to place a shallow sheet-iron tray, fitted with a cover of metallic gauze or muslin at the bottom of the drawer or box, which should also be furnished with a good tight-fitting lid. Fused carbonate of potash is placed in the tray, and the drugs allowed to rest on its porous cover. It is easy with this apparatus to effect the perfect desiccation of drugs; and substances possessing delicate odours which it is desired to preserve are better dried by this means than any other. Squills which have become damp and acquired an unpleasant smell, if placed in a box furnished with a tray of carbonate of potash, will in a short time lose their odour completely and become dry and brittle, so that they may be readily powdered. Rose leaves may be thus dried perfectly, their perfume being admirably preserved.

The author prefers fused carbonate of potash to chloride of calcium, quicklime, or any other desiccating agent. In cases where the substance to be dried contains a great deal of water, it is necessary to change the carbonate of potash once or twice and re-fuse it.

A Test for Alcohol.

M. A. Lieben states that the following reaction affords the means of detecting small quantities of alcohol.

A small quantity of the suspected liquid is introduced into a test-tube with some grains of iodine and a few drops of caustic soda. The mixture is heated slightly, but without boiling; if alcohol is present, a yellowish crystalline precipitate of *iodoform* is deposited. He avers that $\frac{1}{2000}$th of alcohol dissolved in water can be thus detected.

By applying this test to the examination of ether, M. Lieben has found that it is very difficult to remove the last traces of alcohol from that substance by washing with water. To avoid so many washings, he thinks it better to submit the ether to an oxidizing mixture of bichromate of potash and sulphuric acid; then to remove the products of the oxidation of the alcohol by washing once or twice with water.

M. Lieben has also applied his reaction to the examination of urine after drinking alcoholic liquids. He can always detect alcohol in the first portions of the distillate.

Preservation of Eggs.

M. H. Violette finds that eggs may be preserved perfectly good for the space of six months by rubbing them over with linseed oil. At the expiration of the above time they are full, and quite uninjured in odour and taste.

On Rice Spirit.

Mr. James Bell* has carefully investigated the nature of the impurities present in spirit made from rice. It is well known that such spirit possesses a peculiar pungent and disagreeable odour, which unfits it for a number of purposes. It is manufactured by converting the starch of the rice into glucose with sulphuric acid in a close wooden vessel under steam pressure at a temperature ranging from 216° to 230° F.

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* 'Chemical News,' vol. xx., no. 512.

Mr. Bell states that the pungency of the spirit is less when the rice has been well freed from husk, and the process of saccharization conducted at the lower temperature of 216°. He finds that the principal impurity of this spirit, to which its odour is attributable, is acrylic aldehyd. He considers that this substance is formed from the fatty matter contained in the rice. The fat being decomposed by the oil of vitriol, the liberated glycerine yields acrolein by the further action of the sulphuric acid. Crude rice spirit freely reduces ammoniacal nitrate of silver on the application of a gentle heat. A very small quantity is also capable of instantly decomposing a solution of permanganate. The fact has long been known that rice spirit contains some compound which possesses the property of dissolving and keeping in solution certain compounds of mercury which are insoluble in pure alcohol and water. Mr. Bell shows that this is due to the acrylic aldehyd, which acts in this respect like acetone.

Mr. Bell indicates two methods by which this aldehyd may be removed and the spirit rendered pure. One is to distil it from caustic potash; and the other is by the action of bisulphite of soda. When the crude spirit is treated in the cold with caustic potash, and allowed to stand for some hours, the pungency rapidly disappears, and there is simultaneously produced a dark brown resinous substance, soluble in alcohol and ether. The spirit recovered by distillation is free from acrid odour, and gives the normal reaction with mercury compounds for ethylic alcohol.

The addition of a very small quantity of the acid sulphite of sodium to the crude spirit, also rapidly destroys the pungent odour, and the product after distillation is unobjectionable in quality.

The Poisonous Action of Pyrogallic Acid.

In a memoir on the use of turpentine as an antidote in phosphorus poisoning, M. J. Personne has expressed the opinion that phosphorus kills by absorbing the oxygen from the blood. Where the absorption of the poison is rapid, a true asphyxia is thus produced, which promptly causes death. According to this opinion, the turpentine acts by preventing the phosphorus from burning in the blood, in the same manner that it arrests its combustion at ordinary temperatures in the air. Being thus deprived of the power of removing the oxygen from the blood, the poison can be eliminated without causing any fatal derangement of the animal economy.

In order to test the accuracy of this doctrine, M. Personne has conducted some experiments with pyrogallic acid, a substance very different from phosphorus, but which resembles it in its power of absorbing oxygen very energetically, while in contact with an alkaline liquid. This acid was administered to two dogs; to one two grammes, and to the other four grammes were given in dilute solution.

All the symptoms of asphyxia were soon exhibited, and the animals manifested the same sufferings that result in cases of phosphorus poisoning. The animal which received the larger dose died at the expiration of fifty hours; the other ten hours later. The *post-mortem* indications were similar in all respects to those observable in cases of death from phosphorus.

A New Explosive Powder.

M. Bruyère has suggested the use of picrate of ammonia for the preparation of explosive powders. This salt, when ignited, does not detonate like most of the other picrates; it inflames without explosion, burning slowly with a reddish flame, and leaving a deposit of carbon. M. Bruyère associates this body with saltpetre, and thus obtains a slow powder, the force of which can be varied according to the proportion of the two components. The best results are obtained with a mixture of 54 parts of picrate of ammonia, and 46 parts of nitre. In the combustion of this mixture all the carbon is consumed, the residue consisting of carbonate of potash. It inflames with detonation by contact with an ignited body, but does not explode by a blow. Heated carefully on a sand bath, the explosion does not occur until the powder has reached 310° C. By maintaining the heat between 200° and 250°, the whole of the picrate may be sublimed away.

Compared with ordinary gunpowder, the author considers it is more homogeneous, less hygroscopic, and, weight for weight, more effective. The solid residue is less, and being all carbonate of potash, is without action on metals. The smoke is almost suppressed, and is without odour.

A mixture of 25 parts of picrate of ammonia, 67 of nitrate of baryta, and 8 of sulphur forms a powder which burns very slowly, but gives an excessively bright flame, possessing a fine green reflection. This mixture can be employed for Bengal fire.

Medicinal Action of Papaverine.

Papaverine, one of the alkaloids of opium, which was stated by M. C. Bernard to possess no narcotic property, has been studied physiologically by MM. Liederdorf and Bresslauer. Their experiments were made on the insane. They find that papaverine exercises upon man a decided soporific action, and, at the same time, diminishes muscular activity. It reduces the frequency of the pulse in all cases, and its calming action is not preceded by a period of excitement. It never causes nausea, vertigo, headache, or constipation, but, on the contrary, tends to reduce these symptoms. It generally acts slowly, about four to seven hours after administration. It may be given subcutaneously in the form of hydrochlorate. Dr. Stark fully confirms these observations; he administers it in doses of 1 to 2 grains by hypodermic injection, and considers it to be constant and simple in its action.

Coralline not a Poison.

In the discussion which occurred a short time back on the poisonous character of certain dyes used in the manufacture of coloured socks, the most deleterious substance was said to be the red dye coralline.

M. Tardieuc ommunicated to the French Academy some observations on this subject, tending to that conclusion. In fact, this eminent physician adduced experiments to show that coralline is an energetic poison capable of causing death in small doses.

M. Landrin, on the contrary, after several careful trials of this substance was led to form an opposite opinion.

M. Paul Guyot now publishes the results of a similar set of experiments which have also led him to a negative result. He concludes that coralline is not poisonous, even in large doses, and that it may be used in dyeing without danger.

On the Essence of Sassafras.

MM. Grimaux and Ruotte have made an investigation into the chemical constitution of the oil of sassafras. This oil is colourless when first rectified, and becomes yellow by exposure to air and light. Its density at zero is 1·0815. It rotates the plane of polarization to the right. It is a mixture of a dextrogyre hydrocarbon and an inactive oxygenized principle. It also contains a very small proportion of a body which appears to be a phenol, and has the power of reducing nitrate of silver at the boiling-point. This body is separated from the essence by agitation with solution of potash. It may be reprecipitated by hydrochloric acid in oily drops, presenting a strong odour of eugenic acid, and assuming a bright green colour with ferric chloride.

The hydrocarbon saffrene contains $C_{10}H_{16}$. It boils between 155° and 157° C.; and possesses a density of 0·8345 at zero.

Nine-tenths of the essence distil over between 230° and 236°; this portion is the oxygenated principle safrol, $C_{10}H_{10}O_2$. This body has not a rigorously constant boiling-point, because it resinifies slightly by the action of a high temperature. Safrol has a density of 1·1141 at zero, and remains liquid at −20°. It does not combine with the bisulphites. By the action of an excess of bromine it yields a solid crystalline pentabrominated derivative, $C_{10}H_5Br_5O_2$.

EXCRETA OF TOWNS.

The following is an abstract of a paper on a chemical method of treating the excreta of towns, by Edward C. C. Stanford, F.C.S., read before the Chemical Section of the British Association at Exeter:—

In this paper the author advances arguments to show that the present water-closet system cannot be a permanent one, and submits a method by which, using charcoal instead of earth, the dry system can be universally employed in cities.

The specified objections to the use of water are:—

1st. The enormous cost of the works required in proportion to the small amount of noxious material to be removed.

2nd. The large annual outlay required to keep the closets in order, and their unfitness for the dwellings of the poor.

3rd. The immense quantity of water required (865 times the weight of the excreta) where, as in many towns, there is much difficulty in obtaining it.

4th. It results in a subterranean flood of filthy water, which must flow somewhere; and wherever it flows it pollutes the region, thus distributing and disseminating the evil.

5th. The material removed has its value of 30*s*. per ton reduced by dilution to 1*d*. per ton, which it is impossible by any known chemical method to extract with profit.

6th. The sewers generate an abundance of noxious gases, which diffuse malaria into our streets and dwellings.

Instances are given of large outbreaks of gastric and other fevers entirely traceable to this source; and authorities are quoted to show the extreme danger of the poisonous emanations.

Dr. Fergus, of Glasgow, first pointed out a fruitful cause of escape of these gases into dwelling-houses. He frequently noticed a peculiarly offensive sickly odour in attending patients suffering from gastric fever, and in all cases traced it to the lead siphon and soil-pipes of the water closet.

On examination these were always found to be perforated with small holes, through which the gases freely escaped into the house. In some instances the whole interior of the pipe is eaten away and lined with a light brown powder, the nature of which was investigated by the author of this paper. From the several analyses given, it contains 86 to 92 per cent. carbonate of lead, and 2 to 3 per cent. carbonate of lime. The carbonic acid, aided by the other gases of decomposition, acts on the lead, producing carbonate of lead under similar conditions to those which obtain in its manufacture on the large scale, the carbonate of lime being derived from the solid excreta. The evil exists in many houses where it is long unsuspected, and it shows that lead pipes are quite unsuitable for carrying house excreta.

Dry System.—None of these disadvantages can be urged against the dry closet, still less can any serious evil attend its use, for it meets every sanitary requirement. Its machinery is simple and effective; cheap in first cost and in use. It effects at once a great saving of water, and it enables us to secure the whole value of the excreta. When dry earth is used, the only objections to its adoption in large cities are—

1st. The difficulty of obtaining the supply of dry earth, three and a half times the quantity of the excreta being required.

2nd. The cost of removal, involving the carriage of 3½ times the weight of the excreta into the city and 4½ times its weight out. Both these difficulties are at once removed by the use of charcoal, of which only one-fourth the quantity as compared to earth is required; and, given a stock to commence with, by reburning the product the charcoal is obtained from the excreta itself. It is not necessary to reburn it after each use; for dry closets it may be dried and used again five times before being reburned, and for urinals alone it may be used ten times.

The reburning is conducted in apparatus which admits of collecting the ammonia, acetic acid, and tar which distil over in the usual condensers. The whole of the ammonia is thus collected, whilst the phosphoric acid, potash, and mineral matters accumulate in the charcoal, together with the carbon from the organic constituents of the excreta. The weight of the charcoal is increased to the extent of about 5 per cent. with each use, and if dried and re-used five times, about 25 per cent. with each reburning. With this constant addition, the char does not require replacing with fresh material; the ultimate result being that the excreta are absorbed and deodorised by a charcoal derived from themselves. Thus, a city working this process would, in addition to securing the whole of the ammonia and other products of destructive distillation, become sellers of a charcoal second only in value to that from bones,—the product, in fact, of disintegrated bone and muscle.

A city of 500,000 inhabitants, for instance, would produce 19 tons a day, or 6935 tons a year; the total quantity of excreta to be removed being calculated at 385 tons a day, and its value at 29*s.* 6*d.* per ton—£569—the ultimate result being the same. Any charcoal may be used at first, but that from seaweed is preferred as the best and cheapest.

Attention is drawn to the fact that in such a population as that referred to, the fat passed in the solid excreta would amount to seven tons a day, and this would appear among the fatty oils of the tar and form another of the products recovered.

Starting with seaweed charcoal, a lengthened series of experiments with urine were undertaken, the results of which are tabulated. The same charcoal was used 100 times and reburnt 10 times, during which it had increased 183 per cent., and had given off ammonia equal to 316 per cent. of sulphate. The tables show the increase of potash, phosphoric acid, etc., for each reburning, the phosphoric acid appearing as phosphate of lime; the charcoal, containing at first 20 per cent. carbonate of lime and 5 per cent. phosphate, gradually decreases the carbonate to 2 per cent. and increases the phosphate to 25 per cent., at which it remains stationary, forming a sugar refiner's charcoal. The phosphate of lime thus gradually deposited is equal to soluble phosphates for manurial purposes from its finely divided condition.

The results of a series of experiments with a dry closet are also tabulated. The quantity of char used was only 48 oz., to which 18 oz. were added after, the total amount employed being 66 oz.; the amount at the end of the experiment was 123 oz., 57 oz. having been derived from the excreta. This small stock had served 181 uses and absorbed 808 oz. mixed excreta, having been dried and returned to the closet 17 times and reburnt 10 times. The analyses show this to be a prolific source of ammonia, the average yield of sulphate being 7 per cent. of the wet excreta and 31 per cent. of the dry. The yield of acetate of lime was 4 per cent. and of tar 9 per cent. of the dry excreta. A portion of the ammonia is combined with acetic acid. The char becomes uniform at about 24 per cent. phosphate of lime, and 12 per cent. carbonate. This process then presents the following advantages:—

1st. Total freedom from all odour, even in an invalid's room.

2nd. Certain prevention of infectious diseases arising from sewer leakage into wells, or sewer gases into houses.

3rd. Enormous saving of water and cost of closets.

4th. It confines the nuisance instead of distributing it. One hundredweight of charcoal per month is sufficient for each closet, when used by six persons daily; and the whole may be allowed to fall at once from the closet through a 12-inch pipe to a cesspit below the house, and emptied once a year. The quantity is not more than the house ashes.

5th. By this process only can the whole of the valuable material be recovered for the use of the land. Instead of forcing on the farmer a large quantity of sewage when he does not want it, it enables us to store up the manure in a convenient form until he requires it and can pay its full value.

THE DETECTION OF ALUM IN BREAD.

It appears from proceedings in the Cheltenham Police Court, that eighty-five samples of bread had been obtained for the purpose of being examined by the county analyst, Mr. Horsley, resulting in summonses being issued in five cases, two of which were withdrawn.

The proceedings were taken under the 6th & 7th of William IV.

Mr. Horsley attended, having all the appliances necessary for conducting the experiments before the Court. In the first case Mr. Horsley stated that he had applied the usual tests for the detection of alum, and found it present, though in a very small degree. He explained the two tests usually applied in such cases, and by means of diagrams and a practical experiment, exhibited the method and result to the magistrates.

Mr. Marshall, who appeared for the defendant, was instructed to deny the addition of any alum whatever, or the use of "baking powder;" two men in the employ of the defendant gave evidence to this effect. In reply to some observations addressed to the Court as to the manner in which these informations had been laid, Mr. Horsley said he had found alum in only three instances; he at first thought it was in five, but the informations which had to be laid within forty-eight hours, were taken on the supposition that it was present.

In the second case Mr. Horsley deposed to the presence of alum in a more appreciable quantity than in the previous case.

The third case showed the presence of alum in much larger quantity than in either of the others; in fact, the use was admitted of a composition known as "hards," and this was shown by Mr. Horsley to consist of equal parts of alum and salt. The proportion of alum to the sack in the samples tested was about 6 oz.

Mr. Marshall addressed the Bench, pointing out that it was not surprising that a countryman should unwittingly offend against an old Act of Parliament, some of the provisions of which were infringed every day. He also contended that Mr. Horsley's tests were not reliable. However, the magistrates inflicted the mitigated fine of £5 in each case.

The solicitor in one of the above cases has written a letter to the 'Cheltenham Examiner,' complaining of the manner in which the prosecutions were undertaken; and with reference to the tests, states that he was prepared to contest their reliability for the detection of alum in bread. He observes, "the logwood test," the one applied on this occasion, is unreliable. To quote from a letter of an eminent analytical chemist, "I have no confidence in this test, as I believe that when applied to bread, it sometimes points to the presence of alum when no alum whatever has been added to the bread. The only trustworthy process is that of burning the bread down to ash, and examining the ash for the constituents of alum." And this view is clearly endorsed by Mr. Horsley, who states, 'Chemical News' of December, 1861, and in June, 1863, "That nothing short of incineration and subsequent treatment with an acid and tannin, will enable us to extract pure alumina."

[The subject was fully discussed in this Journal, some years ago. See Vol. XVI. p. 557, and Vol. XVII. p. 327.—Ed. Pharm. Journ.]

THE CARRIAGE OF PETROLEUM.

The following letter from Francis Sutton, F.C.S., appeared in the 'Times' of November 1st:—

"Sir,—Two letters have appeared in the 'Times' lately on the carriage or storage of petroleum. I do not happen to have the letters before me, but the second letter I know was from Dr. Benjamin Paul. So far as I can remember the tenour of the first letter, it suggested that many of the dangerous accidents which have occurred of late years have resulted from naphtha, and not from petroleum. To this suggestion Dr. Paul apparently agrees, and states his opinion that a considerable quantity of light petroleum spirit is conveyed under the guise of safe petroleum oil, and may thus have led to more accidents than the properly rectified petroleum would have done. As none of your scientific correspondents have undertaken to explain the matter more fully I venture, with your leave, to give a description of the various kinds of inflammable oils or spirits found in commerce, and which are often indiscriminately termed naphtha or petroleum.

"The term naphtha is generally applied to two kinds of liquid—one derived from wood possessing very much the properties of strong spirit of wine, and used mainly for making French polish and for singeing horses' coats; the other is obtained from coal-tar by distillation, and is used very largely for burning in the outdoor lamps commonly seen at fairs and markets; it is also extensively used in the preparation of the beautiful colours known as coal-tar dyes.

"Of late years, however, the same name has been given (and quite appropriately) to the light spirit which is distilled from American petroleum, and it is removed from it for the special purpose of rendering petroleum legally safe and burnable in ordinary household lamps.

"Dr. Paul seems to think that this light spirit finds its way extensively to this country, and that it renders the traffic in petroleum more dangerous than it ought to be. I do not believe that this is the case, as I cannot understand for what purpose it can be extensively used; and, moreover, the dealers in petroleum are well aware that an article which will not stand the proper test is sure to be detected at once.

"It is possible, however, that the coal-naphtha described above may have, in some instances, caused serious accidents, since it is excessively inflammable, and is often transmitted by rail or water under the name of petroleum.

"All the kinds here described—namely, wood, coal, and petroleum naphtha—are undoubtedly dangerous things to convey as ordinary goods by railways, steamers, or ordinary sailing vessels, but I contend that it is a grievous hardship to the commerce of the country that, because these things are dangerous to carry as ordinary goods, they should not be carried at all, or only under such circumstances as to render their transit almost prohibitory.

"The fact is, that if their nature is properly understood, and they are treated in a proper way, there is no valid reason why they should not be carried as freely as may be required.

"The celebrated Abergele accident was undoubtedly a sad affair, but I can quite conceive that it might have been just as disastrous had the barrels contained strong Irish whisky instead of petroleum.

"The popular notion as to the explosiveness of petroleum or naphtha is quite erroneous, and the same applies to spirits of turpentine, wood, and coal naphtha, or any other similar substance. In order to be explosive in the true sense of the term, they must contain within themselves the complete elements of combustion, and this they do not. A lighted match may be dropped with impunity into the bunghole of a cask of petroleum, or any other of the inflammable liquids mentioned above, so long as the air is excluded; but, on the other hand, if the *vapour* of any such liquids becomes mixed with the proper quantity of air required to produce an explosive mixture, then explosion will occur, and precisely the same with coal-gas. Any one might, without the slightest danger, drop a lighted candle into one of the largest London gas-holders through a small orifice. It would simply set fire to the gas issuing from such an opening, but the candle itself would undoubtedly be put out, simply because coal-gas has no power of supporting combustion without atmospheric air.

"Gunpowder, gun-cotton, or nitro-glycerine, are, on the other hand, explosive in the strict sense of the term, because they contain within themselves the necessary oxygen to support their combustion.

"Bearing these facts in mind, there ought to be no great difficulty in carrying inflammable liquids by rail, if they are only stored in the proper way; three things are especially necessary—no leakage, as little access of air as possible, no lamp or fire must ever be allowed inside the trucks in which the material is to be carried; the Brighton accident arose from a lamp being carried into a truck where petroleum had been leaking, and its vapour had become mixed with sufficient air to make an explosive gas.

"I would suggest that a special truck should be used for carrying all such materials as are here mentioned, very strongly made and lined with lead over the bottom and two or three feet up the sides in such a way as to make it a cistern or pan, through which no leakage could occur even though a cask or two were to come to pieces; the lead being soft and yielding would not be in danger of breaking, except by a thorough smash of the carriage. The opening to the truck would have to be a tightly-fitting falling door at the point where the lead terminates, and a short ladder would lead down to the floor of the truck, with ropes attached for rolling casks up and down. The carriage, when freighted, should be locked up securely, so that no one could open it incautiously, and on no account should it be unlocked or interfered with, except by daylight.

"This may not, possibly, be the best arrangement of truck in every respect, but some similar arrangement, calculated to preserve inflammable liquids from the atmosphere, would render the traffic in such things almost as safe as that of the most ordinary goods."

ON MUSCARIN, THE POISONOUS ALKALOID OF THE *AGARICUS MUSCARIUS*.

A remarkable essay has just been published by MM. Schmiedeberg and Koppe on Muscarin, the poisonous alkaloid of a certain fungus called the *Agaricus muscarius*, or *Amanita muscaria*, the properties of which have long been known in connection with the curious but not very pleasant story told by Pereira, on the authority of Langsdorf, of its use for the purpose of producing intoxication amongst the Russian peasants. The alkaloid was obtained, as we learn from an abstract contained in the 'Centralblatt,' principally from the specimens of this species growing around Dorpat, though it seems probable that it is not limited to this species alone. It is procured by means of a somewhat complicated process through the agency of alcohol, with the addition of acetate of lead and ammonia, which leaves the alkaloid in solution, whence, after acidification with sulphuric acid, it is precipitated with iodide of potassium and mercury, or potassium-bismuth-iodide. When freed from the latter salts, it appears as a strongly alkaline hygroscopic mass, destitute of taste and smell, drying, when evaporated over sulphuric acid, into crystalline laminæ, easily soluble in alcohol and water, soluble with difficulty in chloroform, and not at all in ether. It burns without subliming at a temperature of 100° C., giving off an odour feebly resembling tobacco. The proportion of the alkaloid contained in the agaric is very small, not exceeding ten or twelve grains in two pounds of the fresh fungus. As regards its physiological properties they appear closely to resemble those of the Calabar bean, and, like this, to be antagonistic to atropine. It acts with remarkable energy on cats, a very small quantity injected subcutaneously producing an abundant flow of saliva and of tears, vomiting, diminution of the frequency of the pulse, and such extraordinary contraction of the pupil that this only appeared as a narrow black slit. Subsequently dyspnœa and debility of the muscular energy supervened, amounting at length to paralysis. Before death the pupil became widely dilated; and the fatal issue resulted from arrest of the respiration, the heart continuing for some time to contract feebly. Larger doses were required to kill dogs and rabbits; and no contraction of the pupil occurred in the latter. The influence of muscarin on the heart was carefully noted in frogs. The subcutaneous injection of the one-tenth of a milligramme caused retardation of the heart's action by prolonging the diastole,—the auricle, and then the ventricle, after a few minutes, ceasing to act. For several hours, however, the slightest touch of the ventricle induced a single powerful contraction, showing that the motor apparatus was not paralysed. Section of the vagi caused no variation in the phenomena, and hence the authors were led to refer the phenomena to a persistent excitation of the inhibitory apparatus situated in the heart itself; and the correctness of this view was established by the following control-experiment:—Von Bezold and others have shown that atropine paralyses the inhibitory apparatus situated in the heart of mammals, and Schmiedeberg has proved in that of frogs also. Now it is worthy of notice that a dose of atropine will completely remove the influence of muscarin; so that if the heart of a frog has been quiescent for hours, providing its irritability is retained, it begins again to pulsate, and to acquire its former activity if a dose of atropine be injected, whilst, inversely, muscarin exerts no influence on an atropinized frog. A similar antagonism exists between muscarin and atropine in regard to the heart of mammals.

In animals poisoned with muscarin the blood-pressure sinks almost immediately to one-third of its normal amount. To this primary and principal depression a period succeeds during which it slightly rises again. The prodigious fall in the first instance is probably due, not simply to retardation of the pulse, but to a sudden loss of tone in the vessels,—a loss which is rendered evident in rabbits by dilatation of the vessels of the ears. After the injection of atropine the blood-pressure recovers itself again, and considerably exceeds the normal amount, probably on account of the complete abolition of the influence of the pneumogastrics. The action of muscarin is very energetic on the abdominal organs; and here again resembles that of the Calabar bean, the intestines, bladder, and even the spleen becoming, as it were, tetanically contracted. The intestines first become converted into a hard, white cord, and then, becoming somewhat relaxed, exhibit vigorous but irregular peristaltic movements. The effect does not occur if, by compression of the aorta, the adit of blood to the intestines is prevented. Here, also, atropine presented distinctly its antagonistic action. The sialogogue influence of muscarin was always that which was first exhibited, and in all animals alike, whatever their sensitiveness to the poison might otherwise be. The effect on the pupil appears to be but slow in man, and to produce it a considerable dose is required.—*The Lancet.*

WHAT BECOMES OF MEDICAL STUDENTS?

Under this title, Mr. Paget favours us with a short but most interesting paper in the "St. Bartholomew's Hospital Reports." The chief statistical data are thus given. Of 1000 students whose careers were known, 23 achieved distinguished success; 66, considerable success; 507, fair success; 124, very limited success; 56 failed entirely; 96 left the profession; 87 died within twelve years of commencing practice; 41 died during pupilage. "In this table, they are classed as having achieved distinguished success who, within fifteen years after entering, gained, and to the end of the time maintained, leading practices in counties or very large towns; or held important public offices; or became medical officers of large hospitals; or teachers in great schools, as the professors of anatomy in Oxford, Cambridge, and Edinburgh, all of whom it was my singular good fortune to have for pupils." This last very gratifying circumstance may be employed as a set-off against the fact that one of the number was hung—the notorious Palmer. It is added respecting Palmer, "He was an idle, dissipated student, cursed with more money than he had either the wisdom or the virtue to use well." "Those who failed entirely were of a very mixed class. Of these, fifteen were never able to pass their examinations." "It will seem strange to any one that so many as ninety-six—that is, nearly 10 per cent. of the whole number—left the profession." "Against these, we have only seven who came to us from other professions; and of these, five again left us." Of those who gave up the profession, sixteen left while pupils; two retired on private means; four, after engaging in practice, had to leave in disgrace; one, speculating in mines, lost, committed forgery, and is in prison; three became actors; four entered the army with commissions; three enlisted as privates. Twenty-seven left the profession for various other pursuits. Three became homœopaths; but, says Mr. Paget, "took to that class no repute for wisdom or working power." The fact that data exist for the compilation of such a report as this is a most creditable indication of the supervision given by St. Bartholomew's teachers to their students. We should be glad to quote even more than we have done; but it would be unfair to the original article.—*British Medical Journal.*

ON THE MEDICINAL USE OF THE SALTS OF ATROPIA.

Professor Buignet, the eminent French pharmaceutist, has recently directed attention to the various uses of atropine, or atropia, as a general remedy, and not merely in affections of the eye. Two salts of this alkaloid are used in medicine, namely, the sulphate and the valerianate of atropia. The former is to be found in our Pharmacopœia, but is intended solely for ophthalmic use, atropia and its salts being regarded by British writers on Materia Medica as unfit for internal use in consequence of their highly poisonous action even in very minute doses. The valerianate is formed by mixing a cooled solution of atropia in ether with a cooled solution of valerianic acid, and from this mixture crystals of the required salt soon crystallize. Acting on the long-established axiom in the therapeutics, that a combination of two similar remedies almost always produces a greater and more rapid effect than an equivalent dose of either of the single remedies, Dr. Michea, as long ago as 1853, made trial of this salt in "affections of the nervous system," and especially in cases of epilepsy. His account of the action of this salt was so favourable that a commission was appointed to investigate the subject, and their report was that valerianate of atropia is decidedly preferable to many of the so-called antispasmodics, and that it offered the great advantage of replacing two drugs notoriously variable in their action—belladonna and valerian—by a combination of their active principles, which was far more steady and certain in its action. The method of administering it is in granules, each of which contains a milligramme, or about one sixty-seventh of a grain of the salt. One granule daily is the proper dose to begin with in an adult, and, in the course of a week, a second granule may be taken daily. This is the maximum dose, any excess inducing dilatation of the pupil and disturbed vision. The author quotes the names of more than twenty physicians who have written to confirm the value of atropia and its salts as therapeutic agents. Taken internally, the salts of atropia have been found serviceable in the treatment of epilepsy, chorea, neuralgia, hysteria, tetanus, intermittent fevers, and those forms of disease of the respiratory organs in which the nervous system is specially involved, as asthma, hooping-cough, and certain forms of nervous bronchitis.

It has been found by Bouchardat and Crosio that cases of severe neuralgia, in which opium, henbane, and sulphuric ether have failed to give relief, have yielded to the local application of an ointment composed of five centigrammes (three-fourths of a grain) of atropia and four grammes (about a drachm) of lard. Pescheux has reported a case of tetanus which he cured by the aid of subcutaneous injection of sulphate of atropia, and Béhier, Richard, and other French physicians have practised the same treatment with success in cases of severe localized pain. One part of sulphate of atropia may be dissolved in 100 of water, and from one to five drops injected. Slight symptoms of belladonna poisoning sometimes exhibit themselves in these cases, but are merely transitory. The smaller dose should be first tried.

As a caution to our ophthalmological friends not to let solutions of atropia fall into the hands of their patients, we may mention a case recorded by Béhier, in which an old man *drank* a solution of sulphate of atropia (·013 to 100 grammes of water) which had been prepared for the purpose of dropping into the eye to facilitate an ophthalmoscopic examination. The dose swallowed was one-fifth of a grain. The following were the most marked symptoms:—An acrid taste in the throat, slight embarrassment in the management of the tongue, muscular weakness, a difficulty in walking, which soon became an impossibility, and disturbance of vision. Knowing the antagonism of morphia and atropia (described by Graefe in 1862), M. Béhier prescribed ten drops of laudanum every ten minutes. Each dose diminished the intensity of the symptoms. The patient took, on the whole, seventy-six drops,—a dose which, if he had not previously taken the atropia, would undoubtedly have produced symptoms of poisoning by opium.

The rapidly increasing use of the ophthalmoscope will probably cause a considerable augmentation in the number of cases of poisoning by atropia. Liebreich (in 1863) remarked that the symptoms of poisoning consequent on the instillation of atropia do not so much depend upon the quantity absorbed by the eye itself as upon the quantity which makes its way through the lachrymal passages into the nose, pharynx, and stomach. When these lachrymal passages are completely obliterated, a strong solution may be applied to the eye for any length of time without inducing the slighest general disturbance. He consequently recommends that, in order to prevent as far as possible this mode of escape of the solution into the nose, etc., the patient should incline his head as forward as possible during the period of instillation, should blow his nose and gargle frequently, and should press one of his fingers against the inner angle of the eye, so that the lower lachrymal point should be drawn down. In cases where these rules cannot be attended to (as when a patient is confined to bed), he recommends the application of a small wire apparatus which effectually prevents the escape of the solution. Professor Buignet's excellent memoir concludes with a description of this instrument and of the method of applying it.—*Medical Times and Gazette.*

HOW TO CURE A COLD.

The following is extracted from a lecture, by Dr. G. Johnson, the Professor of Medicine in King's College, and may prove interesting to our readers:—

The exciting cause of a catarrh, in the great majority of cases, is a chill, or some unknown atmospheric influence, which tends to suppress the action of the skin; and the most successful plan of treatment consists in the employment of means for restoring the free action of the skin. The popular domestic treatment consists in the use of a hot foot-bath at bed-time, a fire in the bed-room, a warm bed, and some hot drink taken after getting into bed, the diaphoretic action being assisted by an extra amount of bed-clothes. Complete immersion in a warm bath is more efficacious than a foot-bath; but the free action of the skin is much more certainly obtained by the influence of hot air —most surely and profusely, perhaps, by the Turkish bath. The Turkish bath, however, is not always to be had, and, even when available, its use in the treatment of catarrh is attended with some inconvenience. In particular, there is the risk of a too speedy check to the perspiration after the patient leaves the bath. On the whole, the plan which combines in the greatest degree efficiency with universal applicability consists in the use of a simple hot-air bath, which the patient can have in his own bed-room. All that is required is a spirit-lamp with a sufficiently large wick. Such lamps are made of tin, and sold by most surgical instrument makers.

The lamp should hold sufficient spirit to burn for half an hour. The patient sits undressed in a chair with the lamp between his feet, rather than under the chair. An attendant then takes two or three blankets and folds them round the patient from his neck to the floor, so as to enclose him and the lamp, the hot air from which passes freely round his body. In from a quarter to half an hour there is usually a free perspiration, which may be kept up for a time by getting into bed between hot blankets. I have myself gone into a hot-air bath suffering from headache, pain in the limbs, and other indications of a severe incipient catarrh, and in the course of half an hour I have been entirely and permanently freed from these symptoms by the action of the bath.

Another simple and efficient mode of exciting the action of the skin consists in wrapping the undressed patient in a sheet wrung out of warm water, then, over this, folding two or three blankets. The patient may remain thus "packed" for an hour or two, until free perspiration has been excited. Let me impress upon you that the sweating plan of treatment, to be successful in cutting short the disease, must be adopted early—I mean within a few hours from the commencement of the symptoms.—*British Medical Journal.*

CASES OF POISONING—ACCIDENTAL AND CRIMINAL.

Deaths from Chloroform.—On Wednesday, November 10th, an inquest was held in the hall of Lincoln College, Oxford, on the body of Mr. Herbert Hildyard Clarke, aged 19, commoner of that college; Mr. F. Symonds, surgeon, attended and assisted in the investigation. Mr. George C. Hitchings, who was the deceased's ordinary medical adviser, and who had administered the chloroform that caused death, said that he had practised as a surgeon in Oxford for twenty-five years, being a member of the Royal College of Surgeons. Deceased had occasion to have a surgical operation performed which he would not submit to without chloroform. Witness called on him on Tuesday morning and examined him to ascertain if its use would be safe, and on the same afternoon, about a quarter to 3 o'clock, he proceeded, in company with Mr. Hitchcock, chemist, of High Street, to perform the operation, and administered two drachms of chloroform on wool in a handkerchief. The deceased soon passed into the first stage of excitement, standing up after the chloroform had been administered. Mr. Hitchcock held him, and in another half-minute he dropped to the ground insensible. The deceased was laid in a reclining position in the chair he had been sitting in, when his breathing and pulse were natural, although quickened, as might have been expected. Witness then performed the operation, which could not in the ordinary way have caused death, although very painful. The chloroform was not again applied, although Mr. Hitchcock held it near deceased, whose pulse suddenly subsided, and extreme pallor came over him. Witness gave him some sherry, and tried other means to rouse him, which had no effect. He then became alarmed, and sent for Dr. Jackson, but on the arrival of that gentleman deceased had expired. Witness used every precaution in his power, and could not account for the death of the deceased. Dr. Jackson, of the University of Oxford, deposed to being called in when deceased had expired. His testimony was to the effect that Mr. Hitchings had administered the chloroform in a proper manner. Mr. Charles Hitchcock, member of the Pharmaceutical Society, confirmed the evidence of Mr. Hitchings.

The jury having expressed a unanimous wish to have a *post-mortem* examination, the inquiry was adjourned from 2 o'clock until 4, when Mr. John Briscoe, surgeon, stated that the deceased had an enlarged heart with thin muscular walls. He considered that death was caused by the action of chloroform on a weak heart. He did not consider it prudent to give chloroform without a competent assistant being present. In the majority of cases he did not think it necessary to make any special examination of the heart before giving chloroform. The jury gave the following verdict:—"That Herbert Hildyard Clarke died from the action of chloroform on a diseased heart. The chloroform appears to have been administered with due care and skill."

A man named Shakey, aged 56, an inmate of the General Hospital, Jersey, died in consequence of drinking chloroform. From the evidence of the head nurse, it appeared that he had in his possession a bottle of chloroform, and was asked by the deceased if it contained gin, he replied that it did not, but that "it contained stuff to send people to sleep," and gave him the bottle to smell at. Shakey took the bottle, but instead of smelling at it, drank about a tablespoonful, he afterwards became very sleepy; various means were used by the nurse to restore him, but he died in about three hours after swallowing the chloroform. Dr. Godfrey said that no doubt the small quantity of chloroform proved fatal. He had read recently of the case of a person drinking half-a-pint without death ensuing.

Accidental Poisoning by Laudanum.—An adjourned inquest was held at Woolwich on Thursday, November 18th, on the body of a little girl, named Clara Jane Rigden, of 32, Charles Street, Woolwich. Deceased's mother procured from a chemist's shop a mixture of twopenny-worth of antimony wine and twopenny-worth of laudanum, and gave the deceased fifteen drops for whooping cough. Shortly after taking the mixture the child died. Dr. Leech, of the 'Dreadnought' Hospital Ship, and consulting medical officer of the Board of Trade, had analysed the mixture, which apparently contained 5 drams of antimony wine and 2½ drams of tincture of opium. Laudanum varied greatly in strength, and the mixture was of a character requiring very great care in administering it. The Coroner recommended chemists never to make up prescriptions unless the name of a medical man was affixed to them. The jury returned a verdict of "Died from an overdose of laudanum, administered in ignorance of its effects."

The 'Pall Mall Gazette' refers to the above case as illustrating the insufficient working of the Sale of Poisons Act, and observes that it is impossible by any legislative enactments to prevent the foolish acts of silly people, but as chemists deal in deadly wares, and are not always cautious, some more simple and efficacious safeguard should be provided than at present exists.

Accidental Poisoning by Morphia.—In the 'Toronto Globe' a case of poisoning by an overdose of morphia is reported. Mrs. Dickson, who had been in the habit of taking morphia to alleviate the pain she suffered from ulceration of the womb, on October 11th took a dose from a bottle containing a solution of muriate of morphia, of the strength of one grain of morphia in the drachm. This solution had been prepared on several occasions by Mr. W. S. Robinson, chemist, Yorkville,—and was labelled "Solution of Morphia—a teaspoonful contains one grain of morphia. Poison,"—who gave evidence at the inquest. From the evidence it did not appear what quantity Mrs. Dickson swallowed, but from the opinion of Dr. Philbrick, who was called in, there appeared to be no doubt that an overdose had accidentally been taken, the jury returned a verdict accordingly.

Poisoning by Salt of Lemon.—An inquest was held by Mr. Richards, deputy-coroner for East Middlesex, Thursday, October 26th, on the body of a child who had died from the effects of "salt of lemon" given by the mother, who afterwards attempted suicide by the same means.

Dr. Letheby, who had made an analysis in the case of the child, stated that the tongue showed the presence of a corrosive or caustic agent, and the sanguineous fluid was very acid to the test paper, and yielded rather more than 2½ grains of oxalic acid, equal to the same weight of acid salts of sorrel. He also received from the police a packet taken from the mother of the child, containing 39 grains of oxalic acid and potash, synonymous with salts of sorrel or salts of lemon, and which was the active agent in causing the death of the child. The jury returned a verdict of "Wilful Murder" against the woman.

Poisoning by Strychnia.—On Wednesday, October 27th, an inquest was held by Mr. Carter, coroner for East Surrey, at Croydon Road, South Penge Park, respecting the death of Emily Fowler, aged thirty-four, the wife of Mr. W. T. Fowler, who was found dead on the balcony of the house in which she lived. From the evidence it appeared that the deceased lived very unhappily with her husband, who was addicted to drink, and who had been in the habit of using most abusive language to his wife. It was also stated by one of the servants that the deceased had threatened to take poison in consequence of the distress of mind she endured by the conduct of her husband. Deceased had told witness that Mr. Fowler had brought home some poison on the previous Friday for the purpose of killing the neighbours' cats, and that she had found a bottle of poison on her dressing-table, which she supposed Mr. Fowler had placed there that she might be induced to take it. A bottle, labelled "strychnine," was found in the smoking-room; it contained a small portion of a white fluid. Mr. Fowler stated to the coroner that he had purchased the poison, but he was quite sure that it was in the form of a powder—not fluid.

A *post-mortem* examination of the body was made by Dr. A. N. Turner, who was of opinion that death had resulted from poisoning by strychnia. At the suggestion of the coroner the inquiry was adjourned for the purpose of having the contents of the stomach analysed.

The inquiry was resumed on Saturday, October 30th, when Mr. Fowler was represented by Mr. Serjeant Sleigh. The coroner observed that as Mr. Fowler was not present while the statement affecting him was made, that part of the depositions must be struck out. Dr. A. N. Turner said he had made an analysis of the contents of the stomach, and could swear to the presence of strychnine in the stomach. No great quantity had been taken; the duration of life afterwards would depend on the quantity absorbed in the system.

Frederick Bingley, chemist, of Plough Court, deposed that he was in the habit of supplying Mr. Fowler with various articles, and on the 29th of September he called and had a prescription made up, after which he asked for some strychnia to destroy cats with. He supplied him with 5 grains; it was in the form of crystal, like coarse salt; the sale of the same was entered in a book according to law. It was not thought necessary to call Mr. Fowler, and the jury, after deliberating an hour and a half, returned the following verdict:—"That the deceased, Emily Fowler, died from the effects of strychnine, but how or by whom administered there is no sufficient or satisfactory evidence."

Death from Prussic Acid.—On Wednesday, November 3rd, Dr. Lankester held an inquest respecting a death by prussic acid. The subject of this deplorable case was Ronald Douglas, *alias* Campbell, aged 28, who, according to the evidence of his brother, Fraser Campbell, had been a professor of modern languages at Paris and elsewhere; he was acquainted with eight living languages, in all of which he had edited papers. He had for some years taken opium, and would swallow one ounce of laudanum at a draught; he also took prussic acid, a bottle of which he always carried with him. His brother was present on the night the poison was taken, and although himself rather intoxicated, he thought his brother was taking too much, and he had no doubt that the deceased took it with the intention of destroying life, as he was always talking of committing suicide. Medical aid was called in, but to no purpose; death took place shortly after the poison was swallowed. A verdict of "Suicide while labouring under temporary insanity" was returned.

On the same day, Dr. Lankester held an inquest on the body of Lewis Browne, aged 49, a Hebrew scholar, and a graduate of a university, who died from long-continued starvation. He had even applied for out-door relief at St. Pancras, and was afterwards admitted into the workhouse, where he was attended by the medical officer, but he was then too far gone, and died three days afterwards, according to the medical testimony, from the effects of starvation.

PROSECUTION UNDER THE PETROLEUM ACT.

At the Thames Police Court, November 3rd, John Harmer, of 9, King's Place, Commercial Road East, an oil and colourman, was charged with keeping petroleum without a licence, in contravention of the Petroleum Act, by which he had incurred a penalty of £20. The oil in question had been tested, and was found to flash at 94° F. Mr. Grantham, who appeared for the defence, called Mr. Kemp, Secretary of the Petroleum Association, who had tested a sample of oil similar to that produced, and found that it gave off inflammable vapour at 106° F. Witness pointed out what he considered to be defects in the apparatus used in the case for the prosecution, which affected the result to the extent of 5 degrees. Mr. Paget, the magistrate, suggested that the two analysts should retire and repeat their experiments. This was done, but as there was still considerable discrepancy in the results of the experiments, Mr. Paget said that on the evidence he had heard, he should convict. He decided that the oil was petroleum, which flashed under 100° F. The Act was one of great importance, and he should inflict the full penalty of £20. Mr. Grantham, for the defence, applied for a case for the consideration of a superior court, but as the question was one of fact, this was refused.

THE CONVERSION OF THE GREEK Υ.

The following letter from Dr. John Harley appeared in the 'Medical Times and Gazette' of October 30th:—

"Sir,—In the review of my work on the 'Old Vegetable Neurotics' in your last impression, the writer very pertinently asks why I have sometimes spelt 'hyoscyamus with an *i* in the third syllable.' I am glad that he has done so, not that I am able to clear myself of the error, but because it gives me an opportunity of calling attention to what amounts to a very wide-spread orthographical degeneracy. To illustrate what I mean in reference merely to medical terms, I will take the last edition of the British Pharmacopœia, a book which abounds in Greek words, and which we assume to be authoritative in respect of the correctness of their form. But, strange to say, we here find both error and inconsistency in the conversion of the *υ*. Thus, on the one hand, we have ox*y*gen and ox*i*de, but, on the other, h*y*drogen and h*y*dride, or h*y*dration. Now, oxide is not an abbreviation of oxy-ide, for German and French ch*y*mists—or, as all the world has it now, chemists—invariably write oxyde, etc. But to revert to the Pharmacopœia, we find in opposite series Plumbi ox*i*dum and Litharg*y*rum. Here is inconsistency. In both the body of the work and in the index the word Glycerinum is immediately followed by Glyc*y*rrhiza. Here is error and inconsistency both; for if *e* were the proper substitute for *υ* in the former word, *y* could not be the equivalent of *υ* in the other, the root in both words being the same—γλυκύς.

"I have pointed out this error in Hooper's 'Physicians' Vade-Mecum,' ed. 8, p. 677, and have in the 'Old Vegetable Neurotics' uniformly used the correct spelling, both of this word and of the derivatives of ὀξύς, and I hope my adhesion to classical rules in respect of these degraded words will be accepted as a sufficient set-off against the unwarrantable freedom which I have used in spelling hyoscyamus with an *i* once in about ten times."

REVIEWS.

VETERINARY PHARMACOPŒIA. By R. V. TUSON, F.C.S. Churchill, 1869.

We cannot determine whether or not this book is intended to perform the same functions for the veterinary profession that the British Pharmacopœia does for our own. It emanates from a private author, and has nothing but its own merits to recommend or enforce the general use of its formulæ. Although Mr. Tuson is Professor of Chemistry and Materia Medica at the Royal Veterinary College, it does not appear that the medicines included in his book are in any way specially sanctioned by the College. We cannot even learn whether the preparations he describes are those employed in the College dispensary. Yet we are inclined to think that the author has intended his book to be something more than a collection of receipts, or a manual of materia medica. He has chosen a plan for his work which gives it the appearance at least of an authoritative standard, intended to regulate the nature and composition of veterinary medicines.

Such a recognized guide would be likely to be advantageous to the practitioners of the veterinary art. If the present volume does not claim this position by right, doubtless it will ultimately attain it by the general consent of the profession. Whether or not it contains the best possible formulæ for the medicines commonly used, or likely to be required, we are not competent to judge, but in general design and arrangement it is all that can be desired for such a purpose.

We shall convey the best idea of the book by saying that it closely resembles the British Pharmacopœia; indeed, a large proportion of the matter is taken from that source. The contents are arranged in the same manner, the substances occurring in the alphabetical order of their Latin names. To each article the English synonym is given, together with the composition, mode of preparation, characters, and tests. After every substance is a list of the preparations in which it occurs. These lists, however, are not very carefully compiled. Thus, after Ferrum, no mention is made of Pilula Hydrargyri et Ferri, which is the only pill in the book; while, under the head Hydrargyrum, we find "Pilula Hydrargyri Subchloridi et Ferri," yet the pill-mass is made with metallic mercury, and not calomel. Again, under Opium is named Tinct. Opii Ætherea, but no form for such tincture is given. In the case of articles which also occur in the British Pharmacopœia, the descriptions or processes are copied almost literally from that work. This renders much of the matter familiar to the pharmaceutical reader; nevertheless, considerable differences are necessarily observable. The reduced number of preparations is very notable. There are only six infusions, five extracts, two syrups, one plaster, and one decoction; but the list of lotions, liniments, liquors, tinctures, and ointments is a goodly one. Many of these are special formulæ, and will probably be of practical use to our readers. Only one pill is included, but the number of masses is comprehensive. The medicinal actions and uses of the substances, with the doses and modes of application, are fully given, and will prove a valuable feature. The weights and measures used are those of the British Pharmacopœia, but the drachm is frequently mentioned throughout the work. Unfortunately this weight is no even part of an ounce, and does not correspond in any way with the drachm by measure, although many persons who use it believe to the contrary. In a few cases we find that parts are ordered in the place of definite quantities. Thus, Spiritus Camphoræ is to be made with one part of camphor and four parts of spirit; consequently, the liquid must be weighed, which will certainly be inconvenient.

In the treatment of the materia medica, a great deal of explanation has been introduced, more especially in the chemical portion. The new notation is exclusively employed throughout the work. The formulæ of compounds are given wherever it is possible, and the decompositions which occur in all the processes are generally well described, and represented by equations. The *modus operandi* of the chemical tests is also succinctly and clearly stated. This will render the book a valuable manual to veterinary students.

The author would have done well, however, to have bestowed more pains on the correction of the proof sheets. By this means several errors might have been excluded, which will tend to embarrass the tyro. Thus, the decompositions occurring in iodide and sulphate of copper are not correctly given, and a typographical error under white precipitate will render the equation confusing to the student.

In a few instances, also, there is an attempt to make things easy at the expense of accuracy, which ought to be deprecated. Thus in the preparation of Ferri Carbonas Saccharata, the decomposition occurring between sulphate of iron and carbonate of ammonia is represented as

$$Fe_4SO_4 + (NH_4)_2CO_3 = FeCO_3 + (NH_4)_2SO_4.$$

Now this is not strictly true, and does not account for a phenomenon which the student may observe in performing the process,—namely, the escape of carbonic acid gas. Moreover, if the pupil turns to the article Ammoniæ Carbonas, he will find the composition of carbonate of ammonia given as $2\,NH_4HCO_3 + NH_4NH_2CO_2$, which is quite irreconcilable with the formula in the above equation. A teacher has no right to save himself the trouble of a more difficult explanation by substituting the formula of one body for that of another. We cannot specially blame Mr. Tuson in this matter, however, for other writers have followed a similar course.

On the whole, we congratulate Mr. Tuson upon the success of his work, for we honestly believe the book to be a good one. It is likely to be of real value to the readers for whom it is intended. The veterinary student will find it a most useful text-book. As a Pharmacopœia, it may prove an important addition to the literature of veterinary medicine.

NOUVEAUX ÉLÉMENTS D'HISTOIRE NATURELLE MÉDICALE. Par D. CAUVET. Baillière. 1869.

We should be very pleased to see French scientific books more generally used by our students than they are at present. Science forms an important branch of college education in France, and is held in great esteem by the nation at large. As a consequence of this, good scientific manuals are abundant. They exist in variety enough to suit all classes, from the general reader who seeks an easy explanation of elementary principles, to the more earnest student who desires to obtain abstruse knowledge. These books are well written, clearly printed, often profusely illustrated, and, what is also of considerable importance, they are very cheap. Many of them are models of clear arrangement and lucid exposition. The logical tendency of the French mind is well displayed in the treatment of scientific subjects. The English student who desires to gain an orderly method of thought, will do well to extend his reading into the scientific literature of France.

It may be that ignorance of the language will prove a bar to some. Yet it is easy to obtain sufficient knowledge to begin with. A short study of the grammar, and a good dictionary, are all that is necessary. A little patience and the feeling of something gained will then be a sufficient incentive to perseverance.

The book before us is an example of the kind of work we should like to see in the hands of pharmaceutical pupils. It is in two volumes, written in a very readable style, and containing a large number of very excellent woodcuts. Altogether there are 790 engravings dispersed through the text, and every one of them is well executed. We need hardly say how great a luxury these drawings prove to the reader. A great deal might be learnt by the inspection of the cuts alone. All the most important medicinal plants are here pictured in a remarkably life-like manner. As helps to the comprehension and aids to the memory, the value of such pictorial representations cannot be over-estimated. The scope of the work is most comprehensive, comprising a general notion of zoology, botany, and mineralogy, with the history of the plants or animals useful in medicine. Commencing with the animal kingdom, after an excellent chapter on the organic empire of nature, the elements of classification are given with an explanatory table. The six classes—Mammifères, Oiseaux, Reptiles, Batraciens, Poissons, and Branchiostomes—are then taken in their order, and the description of each group is prefaced by a chapter on Généralités, in which the distinctive features of the class are lucidly explained.

After a table showing the subdivisions of the class, follows an account of those animals possessing some interest in a medical point of view. Thus among the fishes, special reference is made to the electric torpedo, the skate, and the oil obtained from it (which was in slight demand some months ago in London), the cod, and the sturgeon. Altogether 330 pages are devoted to the animal kingdom. The natural history of vegetables is preceded by several chapters on botany and botanical classification. The medicinal plants of each natural order are then described. This portion necessarily occupies the greater part of the work.

The mineral kingdom is succinctly treated in 78 pages, native mineral substances only being mentioned.

It is difficult within a limited space to do justice to a work so condensed, and yet so clear in arrangement, and so easy to read as this. An excellent sketch of the general principles of natural history, and a comprehensive account of the organic materia medica, are here combined. Yet the two volumes are published for 12 francs (ten shillings). We fear it will be some time before so good a book in the English language will be issued at so low a price.

Let us add that a copious index is appended, which is a luxury rarely found in French manuals.

BOOKS RECEIVED.

A PHARMACOPŒIA; including the Outlines of Materia Medica and Therapeutics, for the Use of Practitioners and Students of Veterinary Medicine. By RICHARD V. TUSON, F.C.S., etc. London: John Churchill and Sons, New Burlington Street. 1869.

OUTLINES OF CHEMISTRY; or, Brief Notes of Chemical Facts. By WILLIAM ODLING, M.B., F.R.S., etc. London: Longmans, Green and Co. 1870. 8vo, pp. 468.

THE LIVERPOOL MEDICAL AND SURGICAL REPORTS. October, 1869. Edited by P. M. BRAIDWOOD, M.D., and REGINALD HARRISON, F.R.C.S. London: John Churchill and Sons. Liverpool: Adam Holden.

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the EDITOR, 17, Bloomsbury Square. Those received after the 20th of the month cannot be noticed in the ensuing number.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to ELIAS BREMRIDGE, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. CHURCHILL, New Burlington Street, London, W.

FERRI CARBONAS SACCHARATA.

Sir,—The British Pharmacopœia in treating of Ferri Carbonas Saccharata (saccharated carbonate of iron), says:—Carbonate of iron, $FeOCO_2$ or $FeCO_3$, mixed with peroxide of iron and sugar, the carbonate forming at least 57 per cent. of the mixture. Take of—

Sulphate of iron . . .	2 ounces
Carbonate of ammonia .	1¼ ,,
Boiling distilled water .	2 gallons
Refined sugar	1 ounce

dissolve, etc.

Is it possible that this preparation can contain 57 per cent. of carbonate of iron? I tried the process and it does not, and according to theoretical calculation it contains as follows:—

Sulphate of iron, $FeO,SO_3+7HO=139$; $FeO=36$.

139 parts sulphate of iron contain 36 parts of protoxide, which, when combined with carbonic acid, $CO_2=22$, yield 58 parts of protocarbonate of iron.

139 parts sulphate of iron produce therefore not more than 58 parts of protocarbonate, so that 2 ounces or 875 grains of sulphate of iron cannot yield more than $875 \times 58 : 139 = 365{\cdot}1$ grains of protocarbonate of iron, to which 1 ounce or 437·5 grains of sugar have to be added, forming a mixture of 802·6 grains of saccharated carbonate of iron, which is composed of 45·4 per cent. of carbonate of iron and of 54·6 per cent. of sugar. J. SCHWEITZER.

86, *King's Road, Brighton,*
November 20th, 1869.

[Mr. Schweitzer will find in the list of typographical errors noticed in this Journal last July, and previously corrected in the reprint of the Pharmacopœia, as well as by slips inserted in much of the previous issues of the work, that the proportion of carbonate of iron was printed 57 instead of 37.—ED. Ph. J.]

EARLY CLOSING IN THE WHOLESALE DRUG TRADE.

Sir,—I understand there is a growing tendency in the wholesale trade to curtail the hours of business. Several important firms have closed their establishments for some time past at six o'clock, p.m., and one or two more within the last few weeks have followed their example. Trusting that the movement, which is a great boon to those employed, many being obliged to reside a long distance from their places of business, will speedily become universal,

I am, Sir, yours respectfully,
WHOLESALE.

London, November 20th, 1869.

THE ASSISTANTS' GRIEVANCE.

Dear Sir,—As previous to the passing of the late Pharmacy Act, assistants thirty years of age, and who had been in the confidential service of a chemist and druggist for a period of five years, were, by the byelaws of the Pharmaceutical Society, placed on an equal footing with chemists and druggists in business on their own account, I do not think it quite just to them that the late Act should altogether ignore them in the manner it does. Certainly, if that qualification was sufficient then, it ought to be now, as there are, I believe, instances in which young men with very little experience in the business have had friends who, just previous to the passing of the Act, put them in business, and who, soon after the Act became law, discontinued business and went on again as assistants. Hence the injustice: a class who have had friends to give them a helping hand over the stile, are now eligible as members of the Society on their again opening shop, whereas those who have been perhaps twenty years or more engaged in the business must pass an examination, and then be only eligible as associates.

I am not induced to write this in order that we, the senior assistants, should be admitted members of the Society without an examination, but this I think in common fairness ought to be accorded to us, viz., that after passing the Modified Examination, we, and also those who were associates of the Society before the passing of the Act, should be allowed on commencing business to become members of the Society, for which purpose I think a new bye-law would not be an unreasonable thing to ask for. Trusting that you will give this a place in the Journal, and that the liberal precedent of the Council, in admitting to the Modified Examination the assistants engaged in dispensing and wholesale houses, etc., will induce that body to take the necessary steps to admit the senior assistants members of the Pharmaceutical Society.

I am, dear Sir,
Your obedient servant,
A SENIOR ASSISTANT.

PRICES.

Sir,—In proof of the desirability of some general agreement as to prices, allow me to state the following facts:—I had repeatedly dispensed a 12 oz. Scudamore's mixture (dose, an eighth part twice a day), for which I had charged the reasonable country price of two shillings. The same prescription was taken to a house in London—whether or not belonging to that new species a "'co-operative' chemist," does not appear; but it was charged *tenpence!*

The following was presented with the question what the charge would be for *four times the quantity*:—

R. Potassii Bromidi ʒiij,
Syrupi Simplicis ℥j,
Aquæ Destillatæ ad ʒvj.
M.; ft. Mistura. Capiat cochleare amplum ter die.

Not wishing, in these necessitous times, to lose a customer, I quoted 3*s*. 6*d*., and was told that in this fashionable watering-place I was considerably higher than any other house.

I hope, Sir, to see the day when the same sense of honour which influences medical men will descend to chemists; or when, at least, chemists will be capable of combining honourably to promote the interests of their profession, as artisans unite for their trade purposes.

I am, Sir, yours truly,
AN ISLAND CHEMIST.

November 18*th*, 1869.

THE MODIFIED EXAMINATION.

Sir,—In your last issue you advise "A Modified Man" to make a "further effort" to pass the regular examination. About the "Modified Man" I have nothing to say; but I doubt not your advice will come home sadly to many chemists who are somewhat lightly esteemed for lack of this "further effort;" and it is on behalf of these I would put in a plea.

Mr. Deane has justly described pharmacy as "a laborious and ill-paid profession." There are many worthy chemists throughout the country who occupy what I may call solitary stations. Unassisted, the whole work of a shop devolves upon them personally; they are "head men and bottle-washers." To change the adage, "ex uno disce multos." Suppose a man (and the case is not altogether hypothetical) to be between 30 and 40 —young enough to remember his Latin Syntax and Greek Paradigms—educated enough to enjoy, in his rare intervals of leisure, a Greek play, or with Horace "Trojani belli scriptorem relegere;" or, it may be, in some of the myriad paths of science he seeks some solace for his daily drudgery. He does not fear brainwork; he would fain enter the lists with his younger brethren in this "further effort;" like Entellus.

"Non laudis amor, nec gloria cessit Pulsa metu;" but "res angusta domi." He may be the father of a family; or even "without encumbrance," he may find it difficult enough to make an honest living. His question is the cash-box. He sets down the fees; he calculates the cost of additional books and apparatus; he considers the expense of two separate journeys to London (from which he may be far distant); he adds the salary and travelling expenses of a managing assistant on two separate occasions; and perhaps he arrives at the conclusion that it will cost not less than £30. To be exempt from serving on juries may be very desirable; to be an "examined member," with the fullest status the Society can give him is a laudable ambition; but they are as grapes to the fox in the fable. Other considerations—such as the nervous fear which wise men have, lest there should be some weak point which might prove fatal; or a shrinking from examination by fellow-tradesmen, who need not necessarily be his seniors, may make him hesitate; but the pecuniary consideration is an "adhuc, sed non ultra."

I do not mean to charge the Society with the straitness of a man's circumstances; nor would I complain of its rules; I ask kindly consideration for some of those who are either outside the Society, or who can only subscribe themselves as your humble servant,

An Elected Member.

Manchester, November 18th, 1869.

Would you oblige by giving any information you can respecting enclosed queries in next Number of your Journal, and oblige an M.P.S.? Valetudinarium.

Are English pharmaceutical chemists at liberty to open chemists' shops in Paris, or any of the French watering-places?

What are the regulations as to trade at Mentone; are there any English chemists there?

Would an invalid chemist, going there to settle, have any chance of making a livelihood?

Are there any hospitals for English on the Continent where an English chemist would be likely to get an appointment as dispenser, or in any other capacity?

What is the scale of salaries compared to those of England?

A. E. J. (Norwich).—In making *Unguentum hydargyri nitratis*, the heat, which is only intended to set up the action, should not be continued; in fact, in making large quantities, the heat evolved on mixing the acid is found to be sufficient.

"*Alpha*" (Winton).—See Vol. IX. (N. S.) p. 496. It is rather difficult always to obtain a uniform result.

The Modified Examination Certificate.—Communications on this subject have been received from *A. D. G.* (Edinburgh), "*Self-Glorification*" and "*Taraxacum*" (Louth).

The Grievance of Apprentices.—Communications have been received from Mr. J. Robinson, Mr. J. T. Knight, Mr. V. Fowler, Mr. McClelland, J. A., and Mr. C. J. Cann, endorsing the opinions already given on this subject.

C. C. C.—We have no recollection of having received the communication referred to.

G. S. (Beaminster).—Dr. Attfield's 'Pharmaceutical Chemistry,' 12*s.* 6*d.*, is well adapted for the purpose.

J. C. (Leamington).—The iodide, dissolved in alcohol or ether, may be mixed with the oil, and then a gentle heat applied. This can only be done at the risk of spoiling the oil: it is better to give the remedies uncombined.

V. H.—*Belladonna Plaster*, B.P. When an adhesive margin is ordered, the object is to prevent the escape of the plaster beyond the margin, and not for the purpose of making the plaster adhere to the skin.

C. W. (Narborough).—All legally qualified medical practitioners are now exempt.

P. B. (Crondall).—*Zinc ethyl* is formed, together with zinc iodide, when ethyl iodide is heated with metallic zinc in a sealed glass tube: $2C_2H_5I + Zn_2 = ZnI_2 + Zn(C_2H_5)_2$. The two products remain combined together in the form of a white crystalline mass, from which the zinc ethyl may be separated by distillation in an atmosphere of hydrogen. It is a mobile and very volatile liquid, having a disagreeable odour, taking fire instantly on coming in contact with the air, and diffusing white fumes of zinc oxide. It is decomposed by water with violence. Our correspondent should consult any modern manual of chemistry.

"*Dentist*" (Tamworth).—Messrs. Ash and Son, Broad Street, Golden Square, London.

M. P. S.—(1.) *Sale of Poisons' Books.* Several of these books are mentioned in Vol. X. (N. S.) page 254. (2.) We cannot supply the formula.

W. B. (Egham).—*Syrup of Phosphate of Iron and Manganese.* Vol. I. (N. S.) page 288. The syrup should be clear; but as it does not keep well, it is better to mix the two syrups when required for use.

"*Inquirer*" (Bow) should make application before December 31, 1869.

"*Apprentice*" (Liverpool).—(1.) In preparing the lotion, first rub up the lac sulphuris with the glycerine, add the carbonate of ammonia, previously dissolved with a little of the water, and finally the other ingredients. (2.) We have not observed the objection referred to in this case.

Mr. G. Sant (Atherstone), in reply to a question in last month's Journal, states that all particulars respecting the growing of mushrooms will be found in the July number of the 'Floral World, or Garden Guide' (Groombridge and Sons), price 6*d*.

"*Oxoniensis*" (Oxford).—(1.) 'Lindley's School Botany' would answer the purpose. (2.) An acquaintance with both works is expected.

Mr. Joseph Kernot (Naples), care of Messrs. Evans, Lescher, and Evans, will be glad to be informed of the best article for polishing zinc door-plates.

Errata.—"Dr. C. Browne's Chlorodyne judged Physiologically." Mr. Dowse requests us to correct the following:—

1st. Speaking of the action of morphia, it is printed *stains* of blood corpuscles; it ought to have been *stacis*.

2nd. Concerning belladonna it is printed, The fatal termination to poisonous doses of this drug is due to coma, not direct, but indirect through *apulla*; it ought to have been through *apnœa*.

3rd. As to treatment: the stomach was washed out with sulphate; the word 'zinc' is omitted.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. VII.—JANUARY, 1870.

ADDITIONS TO THE SCHEDULE OF POISONS OF THE PHARMACY ACT 1868, AND PROPOSED REGULATIONS TO BE OBSERVED IN KEEPING AND DISPENSING POISONS.

When the Pharmacy Bill was under discussion in the House of Commons, there were advocates for greater stringency who said, "It will be useless to leave the power of declaring new poisons to the Council of the Pharmaceutical Society; to save themselves trouble they will keep the schedule as small as possible." This assertion was met by the very opposite one, "that in order to ensure a monopoly for the chemists, the Council would be continually adding to the list."

Those gentlemen who held the former opinion, perhaps reasoned from the persistence with which the promoters of the Bill resisted the introduction of the word "preparations" after each simple substance enumerated, and resisted it successfully, too, in all but five cases. From want of practical knowledge on such matters, members of Parliament could not appreciate the inconvenience which would have been caused, not only to the vendors, but also to the public, by such a restriction. Take for example "tartar emetic:" had "its preparations" been included, a popular emetic, which, if wanted at all, is generally required suddenly and quickly, would frequently have been delayed many hours in reaching the sufferer. For such reasons as this we think the course adopted by the Council was a wise one. And now comes the proof that those who had charge of the Bill on the part of the chemists are not (and we presume *were* not) merely sacrificing the safety of the public to the convenience of the trade. Our readers will remember—or if they do not, it will be well to refresh their memories by turning back to the 'Pharmaceutical Journal' for April, 1869, and reperusing—a case submitted to the Privy Council on the question of "preparations," particularly of opium. That case opens with the assertion that there is no difficulty with such really dangerous poisons as strychnine, power being given to the Council by section 2 of the Act to declare them poison.

That power has now been exercised, not in a spirit of monopoly, but, as we believe, as a simple matter of duty; and we desire, although the resolution reported in the minutes of Council, and the extract from the 'London Gazette,' both appear in our present number, to note here the addition, which our readers will do well at once to make in writing to their copies of the Pharmacy Act, or introductory chapter of their poison books.

First, then, to Part I. let them add—

Preparations of prussic acid.
„ „ cyanide of potassium and all metallic cyanides.
„ „ strychnine,
„ „ atropine.

And to Part II.—

Preparations of corrosive sublimate.
" " morphine.
Red oxide of mercury (commonly known as red precipitate).
Ammoniated mercury (commonly known as white precipitate).
Every compound containing any poison within the meaning of the "Pharmacy Act, 1868," when prepared or sold for the destruction of vermin.
The tincture and all vesicating liquid preparations of cantharides.

We had occasion last month to draw attention to complaints which had been made in various quarters of the alleged insufficiency of the Pharmacy Act, and we think the course taken by the Council of the Society, and approved by the Lords of her Majesty's Privy Council, will go far towards remedying the deficiency.

But there is yet more to be done, not by the Council, but by the Society itself. We know the difficulty of prescribing a fixed rule to be observed by all chemists in storing poisons, or by all dispensers in sending out medicines to their customers. Over and over again we have declared in this Journal that such a thing would be impracticable; that one unbending rule, applied without regard to ever-varying circumstances must very often break down. Nevertheless, it is perfectly well known that in almost every pharmacy of any repute (and those which are carefully conducted soon acquire for themselves an individual repute), precautions are adopted to lessen the chance of error and accident. Those precautions, founded on the capabilities of each establishment, are carried out without inconvenience, and with so much apparent ease and advantage, that a disregard of them would be a positive nuisance to the parties concerned. Therefore taking the various systems as *alternative* rules to be observed by all can be no hardship to any. It may suit A. to keep all poisons in a compartment where no other medicines are stored. It may be more convenient for B. to keep them intermixed with other articles, but it would be very easy for him to put poisons in distinctive bottles or vessels; not all in bottles of one shape or form, which would to some extent be mischievous, as there is as much danger in mistaking strychnine for morphine as in using morphine instead of some other less dangerous poison, but all in bottles unlike those containing ordinary drugs.

On the other hand, C. may feel both these systems irksome or unsuited to his case, and he surely may promote safety by tying over bottles in such a way that the very fact of having to loosen the cap must draw attention to the danger of the contents of the vessels. Here then are three distinct and simple methods known to be in common use, not put down now in black and white for the first time as some cunningly-devised theoretical scheme, but adopted from practical experience; and to such a code of regulations the Council have determined to ask the concurrence of the Pharmaceutical Society at the general meeting in May next. The three intervening months will give ample time for consideration, nay, even for trial of the propositions, and we shall be greatly surprised if there be not a general acquiescence in the arrangement.

Even in the last clause of the "Regulations," the one on dispensing poisons, the same regard to present practice is observable. It is not stated that bottles of *one shape only* shall be used for liniments, etc., but that they shall be distinctive *or made distinctive*. We have Gilbertson's bottles and Savory's bottles, both excellent for the purpose; but it is quite possible that sometimes neither one nor the other may be at hand of the size required when medicines must be supplied instantly, and then the words "*made distinctive*" come to our aid by enabling the dispenser to cover enough of an ordinary bottle with rough sandpaper to make it recognizable to the touch, even though no light be at hand by which the nurse of the sufferer may read the label.

PHARMACY IN ITS RELATION TO THE MEDICAL PROFESSION.

We wish particularly to call attention to a paper on the above subject, read at a meeting of the Manchester Chemists and Druggists' Association by Mr. Hampson (see page 404), in which important questions are very ably discussed.

THE MEDICINE STAMP AND LICENCE.

Since the publication of the article with the above heading in our last number, the subject has occupied the attention of the Council of the Pharmaceutical Society, and a resolution has been passed at a meeting of the Board, which will be found in the report of their proceedings. Communications have also reached us from correspondents who are interested in the subject, two of which are inserted elsewhere. It is important that those who consider their interests involved, who entertain opinions not already expressed, or whose experience may enable them to supply valuable information on any points connected with the subject, should communicate such matter before the Council have become committed to a decided course of action. Some of the views expressed in the letter signed "Utile," are particularly deserving of consideration.

PENALTIES FOR KEEPING PETROLEUM OR BENZINE FOR SALE WITHOUT A LICENCE.

In the November number of this Journal, we directed attention to the regulations required by law, and being rigidly enforced by the municipal authorities, for guarding against accidents arising from incautious storing and sale of volatile hydrocarbon oils, such as are included in recent Acts of Parliament under the name of "Petroleum." This term, in the Parliamentary sense, comprises not only crude petroleum oils, but products obtained from them, and oils, or other volatile products made from any bituminous substance, such as coal, provided such oils or products *give off an inflammable vapour at a temperature of less than* 100° F. The liquid sold under the name of benzine or benzol comes strictly within the definition of the term "petroleum," and although the Under-Secretary, Mr. Liddell, some time ago, stated to a deputation who waited upon him with reference to this subject, that he did not think it was ever intended the law should apply to the retail sale of small bottles of benzine, yet there is no doubt that, strictly speaking, it does apply to such cases, and that those who sell benzine without a licence are liable to a fine. The Government promised an alteration of the law, to meet the cases of small retail dealers, and a Bill was introduced into Parliament last session with that object, but it was afterwards withdrawn, a promise being given that a more comprehensive measure would, at a later period, be substituted for it. Meanwhile the law, as it was, remains in force, and some serious accidents having occurred in which much damage has resulted from the ignition of petroleum, the authorities are unusually active in putting the provisions of the Act into operation. Three wholesale patent medicine dealers have recently been fined, and although we have not heard of any instance in which retail dealers have been proceeded against, we have thought it right to put such on their guard.

THE TAX ON ARMORIAL BEARINGS.

Notices have been recently inserted in some of the newspapers, which appear to have emanated from the Inland Revenue Office, and are intended to caution the public, with reference to their liability to the payment of duty for the use of armorial bearings. Some alteration was made in the law relating to this duty in the last session of Parliament. By the Customs Act of 1869, there is imposed a duty of £2. 2*s*. 0*d*. a year for armorial bearings if they be affixed to any carriage, and £1. 1*s*. 0*d*. a year if they be otherwise worn or used; and the Act states that the expression "armorial bearings" "means and includes any armorial bearing, crest, or ensign, by whatever name the same shall be called, and whether such armorial bearing, crest, or ensign shall be registered in the College of Arms or not." The notice alluded to above contains a statement implying that the use of any crest or coat of arms,—the Royal arms, for instance,—in any way, such as printing or stamping them on papers used in business, renders the persons so using them liable to the duty. Chemists frequently have something of the sort on their labels, bills, or prescription wrappers, by which they would probably be rendered liable. An application has been made to the Board of Inland Revenue for further information as to the cases in which it is proposed to apply the law, and we hope, in a subsequent number, to be able more fully to explain the subject.

CO-OPERATIVE TRADING.

The remarks we made two months ago on the subject of co-operative trading were intended to induce an inquiry among our pharmaceutical brethren with reference to the intrinsic character of the transactions involved in this method of conducting business, and the effects that might be anticipated from an extension of the system. We are satisfied that a full and candid investigation of the subject in all its bearings will show that the objects contemplated cannot be attained as a permanent and general result, and that to the extent to which they are accomplished in special cases, the success of such undertakings is more apparent than real, while the efforts made for their establishment and support are calculated to disturb the commercial relations existing between different parts of the community, and thus to do much mischief. In commenting on the way in which it has been proposed and attempted to extend the application of the system by the appointment of co-operative agents, we wished and studiously endeavoured to avoid saying anything that should appear to be an undue interference with that free exercise of individual judgment which members of the trading community claim, and, within certain limits, should be allowed, and even encouraged, to exercise. It is gratifying to find that the remarks made have been received in the same friendly spirit in which they were offered, and above all, that they have not been unproductive of effect. Mr. Starkie's communication, inserted at page 438, will be read with great satisfaction, and the candid acknowledgment it contains will no doubt produce an important influence on many of those who, like the writer, have been deluded by the representations made to them of the objects and probable effects of the co-operative system.

PORTRAIT OF THE LATE JACOB BELL.

Many of our readers are aware that shortly before the death of Jacob Bell, a remarkable likeness of him was painted by his friend Sir Edwin Landseer, and that this came afterwards into the possession of Mr. Bell's successor, Mr. T. H. Hills. At the request of members of the Society who have frequently expressed a desire to have a copy of this portrait, Mr. Hills undertook the responsibility of getting it engraved, with the view of supplying copies at a fixed moderate price. The engraving has been executed by Sir Edwin's brother, Mr. Thomas Landseer, and the prints are now ready, and may be obtained from the Secretary, Mr. Bremridge, 17, Bloomsbury Square. There are two classes of prints, namely, proofs before letters, with the signatures of the artist and the engraver, at two guineas each, and proofs without the signatures at one guinea. Any profit that may result from the sale of these prints is to form a fund, the proceeds of which will be applied in providing prizes to be given to those who distinguish themselves at the examinations for admission into the Pharmaceutical Society.

THE TREATMENT AND UTILIZATION OF SEWAGE.

There is no question which, in a sanitary and economic point of view, is more important, and at the same time, apparently more difficult of solution, than that of the best means of disposing of town sewage. The old cesspool system was so obviously bad, and its use was attended with such injurious effects upon the health of the inhabitants in populous districts, that nothing short of a radical change, involving the complete and immediate removal of excreta, with other dirt, to as great a distance as possible from human habitations, was thought likely to afford an efficient remedy for the evils which had been traced to the festering pit at the base of every house. The use of the mop and the pail, with their adjunct water, was well known and approved as a means of getting rid of dirt, and a little modification of this method constituted the new drainage system of our towns. Plenty of water and well-trapped drains, were found to carry off all that was offensive, and to keep our houses and streets free from noxious effluvia. The immediate cause of annoyance being thus removed, we congratulated ourselves on having effected a great sanitary reform, and never dreamt that the new system would soon have to answer for a new class of evils which, if less grave in their nature, are certainly more widespread in their operation, than those of the system which had been superseded.

Many propositions have been made for the treatment and utilization of sewage, or otherwise for the disposal of the excreta of towns, so as to obviate the necessity for polluting the rivers and rendering useless and dangerous that which otherwise applied might be made a valuable fertilizing agent for the land.

Mr. E. C. Stanford, who, personally to many, and by name to still more, is known to our readers as formerly a student in the Society's laboratory, and now a chemical manufacturer, has suggested a method of collecting excreta in a solid state, by the use of charcoal, as described in a paper, an abstract of which was given in the last number of this Journal. Mr. Stanford's paper was read at a meeting of the British Association at Exeter, and we are glad to find that the treatment and utilization of sewage has been considered by the Association of sufficient importance to justify the appointment of a Committee of eminent scientific and practical men, who have undertaken, if the means should be placed at their disposal, to endeavour to solve this question. We have inserted elsewhere (page 433) a letter which has been addressed by the Committee to the municipal authorities throughout the country, and we sincerely hope the appeal thus made will not be without effect.

THE LATE FATAL EXPLOSION OF PICRATE OF POTASH IN PARIS.

In the early part of last year (March, 1869), a disastrous explosion of picrate of potash took place in the premises of a manufacturing chemist, M. Fontaine, at Paris, causing the death of several persons, as well as the destruction of much property. An action has since been brought against M. Fontaine, who has been sued for heavy damages, on account of the injuries resulting from the imprudent use of a dangerous substance. After a long and minute investigation of the subject, in which evidence and arguments were heard on both sides, the judgment of the Court, presided over by M. Cressent, was delivered on Thursday, the 9th of December. The judge, having lucidly and impartially reviewed all the circumstances of the case, stated that, notwithstanding the elaborate nature of the inquiries which had been instituted, the cause of the explosion remained uncertain, and the Court, therefore, decided that they could not, without injustice, impute imprudence to M. Fontaine in this case, as he could not be expected to be cognizant of mysteries which were unknown to the most experienced and scientific operators. M. Fontaine was thereupon immediately acquitted, and the prosecutors adjudged to pay the costs.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *December* 1*st*, 1869,

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

Present—Messrs. Bottle, Bourdas, Brady, Carteighe, Deane, Dymond, Edwards, Haselden, Hills, Mackay, Morson, Randall, Sandford, Savage, Squire, Stoddart, and Williams.

The minutes of the last meeting were read and confirmed.

The Report of the Finance and House Committee was presented, showing on the General Fund Account a balance in the Treasurer's hands of £1001. 7*s.* 2*d.*, and submitting for payment accounts, and various items, amounting to £799. 13*s.* 11*d.*; and on the Benevolent Fund Account a balance of £411. 5*s.* 4*d.*

Resolved—That the Report be received and adopted, and payments made.

The Committee reported that they had estimated the receipts for the month of December, and had ascertained that a larger balance than would be required would be in hand at the end of the year, whereupon it was

Resolved—That the Treasurer be requested to purchase £2000 Stock, New 3 per Cents., to the General Fund Account.

On the further report and recommendation of the Committee, it was

Resolved—That 1700 copies of the Register for 1870 be printed, and published at 5*s.* per copy. That a Calendar of the Society for the year 1870 be prepared, and published at 1*s.* per copy.

It was moved by Mr. Deane, seconded by Mr. Squire,

Resolved—That the House and Finance Committee be requested to examine the applications for the office of Collector, and report to the Council thereon.

The Report and proceedings of the Library, Museum, and Laboratory Committee were read.

With reference to the additional accommodation required in the Laboratory, the Committee submitted a plan by which a sufficient number of benches might be provided, and a certain portion of the Laboratory partitioned off for the use of students pursuing quantitative analysis. Estimates for the work were submitted, and the Council

Resolved—That the consideration of those estimates be again referred to the Laboratory Sub-committee with power to carry out the proposed work, or any modification thereof, which they may deem desirable or necessary.

The following, being duly registered as Pharmaceutical Chemists, were severally granted a Diploma, stamped with the seal of the Society:—

Brady, Alfred, Newcastle-on-Tyne.
Smith, Walter Henry, London.
Spear, Robert, London.
Ward, John Slinger, Stockton-on-Tees.
Warrior, Charles, Northallerton.

The undermentioned Pharmaceutical Chemist was elected a—

MEMBER.

Hill, William Gardner, Edinburgh.

The following Chemists and Druggists, registered under the "Pharmacy Act, 1868," were elected—

MEMBERS.

Berry, William, Bristol.
Dobson, James, Runcorn.
Harker, James Hall, Rainhill.

PROPOSED REGULATIONS FOR THE KEEPING AND DISPENSING OF POISONS.

The Council proceeded to the further consideration of these regulations; some verbal alterations having been made, on the motion of Mr. Mackay, seconded by Mr. Sandford, it was

> Resolved—That the Regulations as to the keeping and dispensing of poisons now laid before the Council and agreed to, be submitted for confirmation to a General Meeting of the Society.

In consideration of the desirability of having a full meeting of the Members of the Society for discussing this question, it was decided that it should be submitted to the General Annual Meeting in May next.

REGULATIONS.

By virtue and in exercise of all powers and authorities in this behalf, the Pharmaceutical Society of Great Britain do hereby resolve and prescribe that from and after the the following shall, within the meaning of the Pharmacy Act, 1868, be regulations as to the keeping, dispensing, and selling of poisons, *videlicet*:—

1. In the keeping of poisons, each poison shall be kept in a box, bottle, vessel, or package, distinctly labelled with the name of the article and the word *Poison*.

2. In the keeping of poisons, one or more of the following systems shall be used:—
   - I. The boxes, bottles, vessels, or packages, containing poison shall be kept apart from other boxes, bottles, vessels, or packages, and shall be so kept in an apartment, cupboard, compartment, or drawer, set apart for dangerous articles.
   - II. The bottles or vessels used in any shop or dispensary to contain poison shall be distinguishable to the touch, as by being angular, fluted, or corrugated, and shall be unlike the bottles or vessels used to contain articles which are *not* poisonous or dangerous, in the same shop or dispensary.
   - III. The bottles or vessels used in any shop or dispensary to contain poison shall be tied over, capped or secured in a manner distinguishable from the way in which any bottles or vessels not used to contain poisonous or dangerous articles used in the same shop or dispensary may be tied over, capped, or secured.

3. In dispensing and compounding poisons, all liniments, embrocations, and lotions containing them shall be put into distinctive bottles, or bottles made distinctive; and labels, containing some word or words of caution, showing that the contents are not intended to be taken, in addition to the name of the compound or instructions for use, shall be affixed thereto.

ADDITIONS TO THE SCHEDULE OF POISONS.

It was moved by Mr. Sandford, seconded by Mr. Deane,

> Resolved—That by virtue and in exercise of the powers vested in the Council of Pharmaceutical Society of Great Britain, the said Council do hereby resolve and declare that each of the following articles, *videlicet*:—

Preparations of prussic acid.
Preparations of cyanide of potassium and all metallic cyanides.
Preparations of strychnine.
Preparations of atropine.
Preparations of corrosive sublimate.
Preparations of morphine.
Red oxide of mercury (commonly known as red precipitate of mercury).
Ammoniated mercury (commonly known as white precipitate of mercury).
Every compound containing any poison within the meaning of the "Pharmacy Act, 1868," when prepared or sold for the destruction of vermin.
The tincture and all vesicating liquid preparations of cantharides

—ought to be deemed a poison within the meaning of the "Pharmacy Act, 1868," and also that of the same each of the following articles, *videlicet* :—

Preparations of prussic acid.
Preparations of cyanide of potassium and of all metallic cyanides.
Preparations of strychnine.
Preparations of atropine

—ought to be deemed a poison in the first part of the schedule A. to the said "Pharmacy Act, 1868."

Moved by Mr. Brady, seconded by Mr. Williams,

That the Board of Inland Revenue be informed that this Council is strongly in favour of the abolition of the patent medicine stamp and licence, and would regard such a step as conducive to the best interests of the public, and the proper carrying out of the provisions of the "Pharmacy Act, 1868."

Amendment—Moved by Mr. Savage, seconded by Mr. Edwards,

That in the opinion of this Council it is undesirable that further steps in connection with the abolition of the stamp duty should be taken at the present time.

For the Amendment,—Messrs. Bottle, Deane, Edwards, Haselden, Randall, Sandford, and Savage.

Against,—Messrs. Bourdas, Brady, Carteighe, Dymond, Hills, Mackay, Morson, and Williams.

The Amendment was therefore lost.

The original Motion was then put.

For,—Messrs. Bourdas, Brady, Carteighe, Evans, Mackay, Morson, and Williams.

Against,—Messrs. Bottle, Deane, Edwards, Haselden, Randall, and Savage.

It was moved by Mr. Sandford, seconded by Mr. Deane,

That in the event of the Board of Inland Revenue declining to remove the stamp duty and licence on the sale of patent medicines, this Council recommend the charge for licence be equalized—that all venders shall hereafter pay ten shillings per annum.

For,—Messrs. Deane, Edwards, Mackay, Sandford, and Savage.

Against,—Messrs. Bottle, Bourdas, Brady, Carteighe, Haselden, Randall, and Williams.

The Motion was therefore lost.

On the Report and recommendation of the Parliamentary Committee, and after due consideration, the Council ordered the following names, now on the Register of Chemists and Druggists, to be erased therefrom.

William Love Elliott.
Josiah Rigby.
Edward Castledine.
John Cundy.
John Seaman.
John Tustian.
Joseph Cluse Stackhouse.

Moved by Mr. Savage, seconded by Mr. Brady—

Resolved—That authority be hereby given and confirmed to Mr. Elias Bremridge, the Registrar appointed under the statute 15 & 16 Vict. cap. 56, intituled "An Act for Regulating the Qualifications of Pharmaceutical Chemists," from time to time, and at all times to recover, in the name of the Council of the Pharmaceutical Society of Great Britain, or the said Society, all penalties which have been incurred, or which may be incurred under the said statute, 15 & 16 Vict. cap 56, and also all penalties which have been incurred, or may be incurred under the Pharmacy Act, 1868.

The seal of the Society was affixed to the resolution.

EXAMINATIONS IN LONDON.

November 26th, 1869.

Present—Messrs. Bird, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, Ince, and Southall.

MODIFIED EXAMINATION.

Fifty-one Candidates were examined; the following forty-one passed, and were registered as

CHEMISTS AND DRUGGISTS.

Armitt, Arthur, Northampton.
Atkinson, John, Manchester.
Birse, William, London.
Boor, William, Birmingham.
Brooks, Owen, Wellington, Salop.
Burgess, Frederick Augustus, London.
Cox, Homersham Edward, Brighton.
Cox, Richard Cobden, Brighton.
Cuthbert, John Edward, Lancaster.
Davies, George, Narberth.
Day, John Charles Thomas, Clifton.
Evans, Charles Edward, Exeter.
Goodall, John Edward, Derby.
Harrington, Philip John, Clifton.
Harrison, Charles, Warrington.
Harrison, Christopher, Manchester.
Harrison, John, Liverpool.
Hindle, James, Chorley.
Innes, George William Rundle, Penzance.
Jarvis, John Swinton, Lee, Kent.
Johnson, Michael, Prescot.
Jones, William, London.
Kirby, John Henry, Cheltenham.
Langman, Jonathan, Cambridge.
Lorimer, John, London.
Magin, Arthur Ellis, Matlock Bath.
Marten, Frederic, London.
Orton, William Billing, Manchester.
Palmer, Henry Bridges, Ludlow.
Perkins, Christopher, Kidderminster.
Pierson, Clement, Sheffield.
Rogers, George Edward, Birmingham.
Smith, Edward Michael Matthew, Wisbeach.
Snow, George Foster, Reading.
Sutcliffe, William Henry, Jersey.
Thomas, David John, Bridgend.
Thornber, Benjamin, Bedford.
Wilday, George Edward, Bicester.
Wills, Charles, London.
Willson, Cornelius, Liverpool.
Wilson, John Edward, Somersham.

December 15th, 1869.

Present—Messrs. Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Hanbury, Haselden, and Southall.

Nineteen Candidates presented themselves for Examination; the following ten passed, and were duly registered:—

MAJOR (as Pharmaceutical Chemists).

*Penrose, Arthur Petch, London.
Sequeira, Eduardo Candido, Rio Grande do Sul.
Procter, Samuel James, Malvern.
Southwell, Charles Henry, Boston.

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* Passed with honours; eligible at the end of the Session to compete for the Pereira Medal.

MINOR (as Chemists and Druggists).

- *Furmston, Samuel C., jun., Wycombe.
- *Hick, George, Bradford, Yorkshire.
- *Webb, Edward Alfred, Clapham.
- Garside, Samuel Arthur, Ormskirk.
- Beard, Thomas William, London.
- Bessant, Frederick R., Hampstead.

The above names are arranged in order of merit.

FIRST, OR PRELIMINARY EXAMINATION.

One hundred and five Candidates were Examined; the following sixty-six passed, and were registered as

APPRENTICES OR STUDENTS.

- Wardley, Frederick Samuel, Lowestoft.
- Aylesbury, William Thomas, jun., Brighton.
- Sweetman, Robert, Warwick.
- Equal.
  - Knowles, Joseph, London.
  - Weddell, Arthur, Stamford.
- Kendall, Edward Basnipp, Nottingham.
- Tucker, William Tyley, Worthing.
- Shaw, William Burton, Scarborough.
- Robson, Arthur William Mayo, Filey.
- Gant, Joseph, Spilsby.
- Melhuish, Thomas Boucher, London.
- Equal.
  - Gardiner, Bruce H. J., London.
  - Harding, Richard Brodribb, Bath.
- Gerring, Charles, Worthing.
- Bates, William, Spalding.
- Rees, John, Aberavon.
- Naish, Charles Ernest, Birmingham.
- Equal.
  - Harris, Frank William, Newark.
  - Thorp, John, Manchester.
- Hodgkinson, Peter James, Congleton.
- Springett, Normington, London.
- Ellwood, Francis Henry, Norwich.
- Weaver, Edwin Thomas, London.
- Equal.
  - Butler, John Harsant, High Wycombe.
  - Dixon, Henry Benjamin, Nottingham.
- Mott, Frederick Walter, Brighton.
- Equal.
  - Palmer, James Spencer, Penzance.
  - Simcock, George, Birmingham.
- Boyfield, John Richard, Boston.
- Whitrow, Benjamin, Winchester.
- Price, Rees, Neath.
- Equal.
  - Hanson, George Huskinson, Boston.
  - Marshall, Eli, London.
- Botting, Charles, Wimborne.
- Equal.
  - Cunnington, Richard Elliott, Bristol.
  - Foottit, Charles Miller, Marlow.
- Equal.
  - Oscroft, James, Salford.
  - Wood, Edward James, Reading.
- Metherell, Kinneard, London.
- Stoddart, Wm. Walter Boycott, Bristol.
- Blake, Arthur, Stony Stratford.
- Equal.
  - Boby, Edward, Ipswich.
  - Cowdrey, Frederic, Reading.
- Equal.
  - Jones, Alfred, Northampton.
  - Treadgold, Frederic Cecil, Worcester.
- Davies, Oliver Morgan, Carmarthen.
- Mann, Joseph, Peterborough.
- Blades, Josiah Brunt, Leek.
- Equal.
  - Hepworth, Matthew G., Bourne.
  - Lloyd, Rees, Dowlais.
  - Wrack, Frederick George, Lincoln.
- Equal.
  - Bell, James, Manchester.
  - Overton, John, Bristol.
  - Pettitt, Hankey, London.
- Equal.
  - Damon, Alfred Ferris, Bristol.
  - Williams, Joseph Bower, Olney.
  - Williams, Richard, St. Clears.
- Peacock, Walter, Oxford.
- Equal.
  - Cooper, John, Newcastle-under-Lyne.
  - Jones, William Frederick, London.
- Equal.
  - Goodman, Henry, Bath.
  - Morris, Arthur Edward, Nottingham.
- Equal.
  - Colborne, Henry, London.
  - Dixon, Daniel, Preston.
  - Fletcher, Joseph, Brigg.
  - Glossop, J. Henry, Weston-super-Mare.

The above names are arranged in order of merit.

The following were the questions in this Examination:—

LATIN.

Translate into English one or more of the following sentences:—

Helvetii jam per angustias et fines Sequanorum suas copias transduxerant, et in Æduorum fines pervenerant, eorumque agros populabantur.

Eo opere perfecto, præsidia disponit, castella communit, quo facilius, si, se invito, transire conarentur, prohibere possit.

Hæc quum animadvertisset Cæsar, convocato consilio, omniumque ordinum ad id consilium adhibitis centurionibus, vehementer eos incusavit.

Misce, et super leni foco, sæpius agitando, cochleare ligneo, coque ad mellis spissitudinem. Hujus oxymellis sumat æger cochleare parvulum ter die.

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* Passed with honours; eligible at the end of the Session to compete for the Prize of Books.

How many declensions of nouns are there, and in what respect do they differ?
Decline *parvus*, *unus*, *felix*, and *viridis*.
State the superlatives of *malus*, *dives*, and *facilis*.
How many voices of verbs are there? Give the endings.
How many moods are there? Name them.

ARITHMETIC.

Subtract 27 cwt. 3 qrs. 23 lbs. from 35 cwt. 1 qr. 21 lbs.

If 40 shillings will pay 8 men for 5 days' work, how much will pay 32 men for 24 days' work?

Divide $\frac{5}{8}$ by $\frac{3}{4}$ of $\frac{3}{4}$ of $\frac{5}{8}$.

Reduce 4½ minutes to the fraction of a week.

Add 27·5 + 52· + 3·2075 + ·5741 + 2720·.

ENGLISH.

What does an adjective express? Give an example.

Correct the following:—John was the best boy of the two.

How many sorts of adjective pronouns are there? Name them.

For what purpose is an adverb joined to a verb, an adjective, or another adverb. Explain by examples.

Write upon *one* of the following subjects:—
The charms of a country life.
The pleasures of home.
The advantages of travelling.

The following, having presented to the Board Certificates of Examination by various public Examining bodies, and the said Certificates having been approved, were registered as

APPRENTICES OR STUDENTS.

Palmer, George	Walmer.
Sanderson, Thomas	Birmingham.
Stevenson, John	Edinburgh.

PHARMACEUTICAL MEETING.

December 1*st*, 1869.

H. SUGDEN EVANS, ESQ., PRESIDENT, IN THE CHAIR.

The Minutes of the previous Meeting having been read, the following

DONATIONS TO THE LIBRARY AND MUSEUM

were announced, and the thanks of the Meeting given to the respective donors thereof:—

Catalogue of Scientific Papers, Vol. III.: from the Royal Society,—London University Calendar for 1869: from the University,—Transactions of the Clinical Society of London, Vol. II.: from the Society,—Third Series of Cases illustrating the Pathology of the Pulmonary Disease frequent among certain Classes of Operatives exposed to the inhalation of Dust: from Dr. Greenhow,—Veterinary Pharmacopœia: from Mr. R. V. Tuson,—Boletin de la Sociedad de Ciencias Físicas y Naturales de Caracas, Numbers 1 to 5: from Dr. Ernst, President,—A fresh specimen of the Leaves and Fruit of the Olive-tree: presented by Mr. D. Hanbury,—Specimen of False Manna alluded to at the Pharmaceutical Meeting, held on the 3rd of November: presented by Mr. H. Sugden Evans, President,—Also for exhibition by Mr. J. E. Howard living plants of *Cinchona officinalis* vars. *Uritusinga*, *crispa*, *violacea*, *Bonplandiana* (s. v. *lutea*), *C. succirubra*, and *C. purpurea*?: all grown in England.

The CHAIRMAN drew attention to a specimen of factitious manna, which he begged to present to the Museum, in illustration of what had been said on this subject at the previous meeting. He need say nothing to ensure attention to the beautiful living specimens of cinchona plants which were put on the table by Mr. Howard, and would be referred to in the paper about to be read.

ON THE CULTIVATION OF CINCHONA PLANTS UNDER GLASS IN ENGLAND.

BY JOHN ELIOT HOWARD, F.L.S.

Since first I had the satisfaction of raising the *C. officinalis* from seed sent me from the mountains of Uritusinga, I have devoted some attention to the cultivation of different species of cinchona under glass. This has extended over a period of about ten years, during the larger portion of which my experiments have been carried on in a conservatory which I had constructed for the purpose, and which, though on quite a limited scale, enables me to estimate what might be done by means of the appliances at the disposal of the directors of our botanic gardens. I have worked through a fair amount of mistakes and misfortunes, and have now about twenty different forms (species or varieties) of Cinchona in various stages of development; and of these, recently flowering, one plant of the *C. officinalis*,* one of the var. *Colorada del Rey*, and one very forward in bud of the (as yet undescribed) *C. Forbesiana*. I have also still in blossom a plant of the *Howardia Caracasensis* about ten feet in height, and covered with flowers for the last two or three months. Such a result, if exhibited to the whole pharmaceutical world, as it might be at Kew, could not fail to excite interest, and, moreover, the possession of living plants gives the opportunity of observing many things not apparent in dried specimens.

The facilities thus afforded for physiological investigation are also very important to those who delight to trace the beautiful contrivances and manifest design everywhere apparent in nature, and to whom well-observed facts are more interesting than mere mechanical theories of vegetation. As an instance, I was recently examining, together with a botanist well acquainted with the *Cinchonæ* in their native woods, some beautiful trebly-scrobiculate leaves of my plants, and we agreed that inspection demonstrated the improbability of a theory recently advanced as regards the scrobiculation, which ascribes its origin to an inherited defect derived from the attacks of insects. The truth being, on the contrary (as I have often observed), that insects are not found to attack this part of the leaf in preference, but are much more addicted to some other portion of the plant. The additional beauty of the leaf derived from the scrobicules and their great regularity must be seen to be appreciated, presenting an appearance quite unlike that of an accidental monstrosity.

As to the light to be thus thrown on botanical arrangement, I may mention the opportunity afforded of raising the seeds proceeding from the same bunch of capsules, and observing thus, as I am doing at the present moment, the amount of variation to be observed in the children of one parent plant.

The very difficulties to be overcome in imitating, as far as possible, the climate and soil of the mountain regions of the Andes, present many subjects of not unfruitful consideration.

The influence of light upon vegetation will force itself upon the attention in all the varied aspects of the question, as, indeed, presenting some of the most formidable difficulties in the cultivation of plants so sensitive as these are to the deficiency of stimulus in the dreary months of winter, and to the excess both of heat and light in our summer above that to which they have been accustomed. The effect of different coloured rays, of polarized light, of a greater or less amount of actinism necessarily comes into view.

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* This plant was cut down, and the produce of sulph. quinine which I derived from it is recorded in my 'Quinology of the East Indian Plantations,' p. 3. It is now again grown up to a height of 8 feet 6 inches. Mr. Broughton has recently found in five exceptionally fine trees, descendants of the sister of the above, 6·20 of purified alkaloids per cent.

Or sulphate of quinine (obtained crystallized) 3·46 per cent.
sulphate of cinchonidin „ 1·94 „
Also cinchonine.

The leaves of many species are particularly sensitive to light, and turn towards the rays of the sun in a manner sufficiently remarkable. In some kinds the structure and colouring are very beautiful, and would quite repay cultivation, with this object in view. They are frequently covered with a lustrous epiderm, as described by Dr. Weddell, in reference to the *Calisaya*. This epiderm seems, as in the case of some other plants, largely composed of wax: when this is removed, either by mechanical injury or by chemical solvents, the leaf suffers, and the oxidation of the juices becomes manifest. It is not easy to imagine from dried specimens, the great variety of structure and characteristic peculiarities which the leaves present; but when once well observed, the aspect of the plant fixes itself in the memory.

The respiration of plants, as affected by a too retentive soil or by too abundant application of water to the roots, has to be studied, and it is also necessary to mark the period of hibernation or repose, and to encourage rather than to interfere with rest at this period, a period which seems in India to be very accurately marked, and which even under glass, it is not difficult to trace.

Then the nutrition of the plants will require much care. It may, at first sight, seem requisite simply to provide the needed soil; and very pure sand, such as Reigate sand, rich loam, and bog earth, in proportions, varying according to the species,—when mixed, as I find desirable, with broken brick,—will sufficiently afford this. But there is more than this; for we shall find, if we study the plant, that it is desirable to supply it at the period of its most active vegetation with food ministered, as much as possible, in a liquid form, and therefore more easily assimilated. For as regards the life and growth of the plant, we may, in a certain sense, adopt the saying of Thales, that "all things are from water," for all things must be in solution (either aqueous or aerial) before they can be changed into the living substance of the vegetable. Now the natural solvent is rain as it falls from the clouds, and in the normal state (as observed by Weddell and Markham) of the *Cinchonæ*,[*] the roots spread superficially through a loose mass of earth and decaying vegetation, amidst which they absorb, together with the rain-water, various mineral substances, and also gases, especially carbonic acid, presented to the spongioles in the manner most to their advantage.

M. H. Struve[†] has recently demonstrated the existence, under certain conditions, of nitrite of ammonia, together with ozone and oxygenated water in rain and snow; and M. Deville has found in snow and rain, collected in the neighbourhood of the hospice of St. Bernard, a similar composition, at least in so far as nitric acid and ammonia being present in greater or less quantities. I learn from Dr. Anderson that some species of cinchona flourish at Darjeeling, although the rainfall averages 127·30 inches for the year,[‡] of which 82 inches fall in three months of the summer. But then the character of the soil and slope of the hills is such that the rain-water, after having bathed the roots, passes away immediately from them; for Dr. Anderson, as every one else, finds the Cinchonæ to be most impatient of water at the roots.

This is difficult to imitate, and the change consequent on the scarcity of rain-water to that derived from springs has (apparently) cost me the health of some valuable plants. Then, again, as the leaves can form chlorophyll only in sunshine, and can only *then* derive nourishment from the air, it must be remembered that, in dark and gloomy weather, we must supply less water and less nourishment to the roots, or the harmony of nature will be destroyed, and the consequences may be fatal. From the same considerations it will follow that too much artificial warmth in the night season will be injurious; and, indeed, the plants never seem to thrive better than when a considerable range of temperature between day and night is allowed to exist. I have found great practical benefit from adopting the system of *double glazing*, leaving a stratum of air about four inches in thickness between the sheets of glass. This tends greatly to prevent sudden chills, which are injurious, and also to retain a larger amount of moisture in the air surrounding the plants. This is much required and best secured by syringing the leaves with tepid water twice in the day, avoiding the collection of water around the roots. It is important to provide well for their drainage by means of broken bricks or tiles; and I find an advantage in conducting the warm water of the return pipes below the level surface of the ground, so as to secure a slight and constant elevation of the temperature. I have a thermometer plunged eighteen inches in the bed of earth in which my largest plants grow, and I have not noticed this below 50° F. in winter. I think that the proper range of temperature might be placed at from 55° F. in winter to 65° in summer.

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[*] The *C. succirubra* prefers a stronger soil, and, perhaps on this account, is more easy to cultivate than some others.

[†] 'Journal de Pharmacie et de Chimie,' November, 1869, p. 357.

[‡] Beardmore, 'Manual of Hydrology,' p. 330.

It is very important to allow as much access of fresh air as possible. It must be remembered that these are mountain plants, loving free air and alternate mist and sunshine, whilst the hot, close atmosphere of the lower valleys is always injurious to their perfection as quinine-producing plants, and generally fatal to their growth.[*] The very condition of *life* depends on the constituent molecules of an organized body being never all in repose; and whilst these are, on the one hand, received from without, on the other hand effete particles are continually expelled from the plant, whilst others are deposited in the formed tissues, thus building up gradually the solid portions of the structure. In this manner plants live, grow, and multiply under the influence of the vital force; and if these phenomena were more constantly under the notice of our writers on Nature, we should perhaps be able nationally to elaborate something better than mechanical theories of life, forced upon our acceptance with an amount of confidence bearing an inverse ratio to the proofs produced. We should, perhaps, not be told that "there is no real difference between vital and physical forces." Even the theory of cell-formation as the origin of all living things, though true as to the manner in which nature works, yet does not elucidate her mysteries. It seems to solve more than it really does explain, for what is the cell but the boundary within which nature carries on her operations?[†] and, after all, what are these? and what is life? Whoever watches the manner in which nature acts the ædile with her cells—("diruit, ædificat, mutat quadrata rotundis")—will think little of the cell itself, and much of that which it contains. If I take in my hands a brick, I have a specimen of material by which, through adding brick to brick, the four walls of a house may be constructed; but I should not be able thence to reason out the nature of the stirring active life which those boundary walls might contain. The addition of brick to brick might very well illustrate the phenomena of crystallization, but the activities of life within the plant much more resemble the course of reconstruction of a great city like Paris, in which an imperial will, availing itself of the all-arranging genius of a subordinate functionary, acts for the good of the whole, and, caring little for the four walls, or for any number of them, if standing in the way of its well-devised projects, adapts the materials even of previous structures to the exigencies of the new thing that has to be produced; and who will deny that the result is admirable?

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[*] I have recently had the opportunity of observing the same result as produced by similar causes in India. Two specimens of red bark were sent over for analysis from "Balmadies," a cinchona plantation belonging to Mr. Rohde. One of these presented the usual appearance of East Indian *succirubra* bark. Mr. Broughton informs me that it was grown in a valley adjoining the Neilgherries, at an elevation of about 4000 feet. Mr. B. made an examination of it. Though actually lower in elevation than the site of the lower Crown barks on the Neddiwuttum plantations, which produce much cinchonidine, it is tolerably rich in quinine. "The climate differs from these latter by this peculiarity, that during the dry season fogs and mist roll up each day from the western coast and moisten the leaves, and *shade* them from the baking Indian sun." The other specimen had the aspect of the *C. rubra dura* of the Germans, and contained less quinine, but more than twice as much cinchonidine. It came "from the hot bottom of the valley."

[†] See 'Chemismus der Pflanzenzelle,' von Dr. H. Karsten. Wien, 1869, pp. 5, 6, etc.

It is thus that practical experience in cultivation leads to the review of theories which must be cast aside when they have served their turn, or demolished when they stand in the way of real *science*, which means *knowledge*, and not *speculation*.

In the address of the President I observe with pleasure the remark that "a country stroll of half an hour will yield material for thought and investigation available for many a day;" and may we not extend the application of the lines which he has quoted to the more difficult, but not less remunerative, objects of study presented by the cultivation of plants in circumstances so different to those of their native habitat? The very difficulties we encounter are a source of pleasure in overcoming them, and enable us to appreciate more fully that infinitely varied Wisdom which has appointed everything beautiful in its season, and all things in measure and number and weight. *Ne quid nimis* is a golden rule for every one that attempts to cultivate the cinchonæ under glass. To neglect this would be to ensure failure in the undertaking.

The CHAIRMAN said they were deeply indebted to Mr. Howard for the valuable and interesting paper with which he had favoured them on this occasion, and he asked the meeting to award him their hearty thanks for it. In addition to the paper which they had listened to with so much interest, Mr. Howard requested their acceptance of some beautiful photographs of living cinchonas, which would be valuable in their Museum. The paper had no doubt suggested subjects which the gentlemen present might feel disposed to discuss, and he should be very glad to hear any remarks upon the subject.

Professor BENTLEY asked Mr. Howard whether, in growing the plants before them, he had adopted any plan for the alteration of light? That was perhaps one of the most interesting matters connected with plants altogether.

Mr. HOWARD said he had adopted coloured glass in one of his conservatories; in fact, in that in which he particularly cultivated cinchonas, he had regulated the light generally by blinds, which were drawn down externally in the summer. He had noticed some things as regarded reflected lights, but he had no perfect observations, at present, of the extent of the action of light.

Professor BENTLEY—Have you ever tried to increase light in any way?

Mr. HOWARD replied that that was very difficult in winter. A great deal more remained to be found out, as regarded the effect of light on vegetation, as they must all be aware, but he was not prepared to say much about it at present.

The CHAIRMAN thought that this was a subject which would lead them all to think somewhat upon the cultivation of medicinal plants generally in this country.

Dr. ATTFIELD inquired whether Mr. Howard had brought the cinchonas of his own cultivation to such a state of maturity as to enable him to extract the alkaloids from them; and, if so, could he state what proportion of alkaloids the barks yielded?

Mr. **Howard** said that having had occasion to cut down one of his plants, in consequence of an accident, he availed himself of the opportunity of stripping off the bark and extracting the alkaloids. He obtained some good sulphate of quinine, and also some cinchonine. As near as he could recollect, the proportion of alkaloids was between one and two per cent.

The **Chairman** said that before they proceeded to the next paper, he would introduce to the notice of the meeting a very beautiful piece of silver plate which Mr. Hills had placed upon the table that evening. It was a very great curiosity, bearing date 1669, and was of a purely pharmaceutical character, having around the margin various devices of the different utensils used in the laboratory and shop, including a very modern-looking drum-sieve. The plate was purchased at Christie and Manson's on the 10th of November, at a sale of the effects of the late Edmund Hopkinson, Esq. There were also upon the table some poison-bottles of a novel construction, sent by Mr. Schweitzer. One was a poison-bottle for powders. It contained a diaphragm, perforated by a large hole to fill it, and a smaller hole. The large hole being corked, there was a small aperture, so that the poison might be shaken out in small quantities, the idea being, that it could not, under any circumstances, be mistaken for a bottle containing non-poisonous substances. There was another bottle for fluids of a similar construction,—a perforated diaphragm below the stopper, and the liquid could only come out in driblets.

NOTES ON THE PHARMACOPŒIA.

BY PROFESSOR REDWOOD.

More than two years have elapsed since the last publication of the British Pharmacopœia, and, as the work came into general use throughout the United Kingdom soon after its publication, there has now been time enough to ascertain how far it fulfils the purpose for which it was intended. Frequent reference has been made to its contents in papers which have been read before this Society at its evening meetings, and much valuable information has been elicited by the discussions which have taken place upon such occasions. Communications of a similar description have also appeared in the Pharmaceutical and other Journals, in which many of the processes of the Pharmacopœia have been commented upon, and a variety of criticisms have been published.

In a work so frequently and extensively used as is the Pharmacopœia, and used under such a variety of circumstances, by prescribers, dispensers, and manufacturers of medicines, who respectively refer to it for distinct and different purposes, but each and all of whom expect to find the required information expressed in the form best suited to supply their wants, it might be naturally supposed that there would be differences of opinion on some points affecting either the nature of the matter or the method of disposing of it. That such differences have been expressed, and freely discussed, may be considered as an indication of the general interest which has been manifested in the subject, and of the capabilities of the existing race of pharmaceutists to criticize a work of this description.

It has been my duty to note the purport of the various statements which have been published respecting the Pharmacopœia, and also to collect information from private sources, including my own experiences, for the purpose of reporting on these subjects to the Pharmacopœia Committee of the Medical

Council. The principal objects of my communication this evening are to explain what I conceive to be the present position of some questions relating to the Pharmacopœia; to state to you what I have already represented to the Medical Council on these topics; to express for myself, and on behalf of the committee with which I have been working, the obligations we are under to a large number of practical pharmacists for much information which has tended greatly to enhance the value of the British Pharmacopœia, and to encourage continued attention and interest in the important object of making this national work equal, if not superior, to any other Pharmacopœia in existence.

Allow me, in the first place, to allude to some of the principal features of the British Pharmacopœia as modified in 1867. I wish especially to notice, first, the language in which the work is written; secondly, the arrangement of the matter; thirdly, the nomenclature applied to the substances treated of; fourthly, the symbolic notation used for representing the composition of chemical substances; fifthly, the terms employed for representing the proportions of ingredients used in the various processes; and sixthly, the method of describing or setting out the formulæ for processes.

1. *Language.*—The British Pharmacopœia is written in English. I am aware that some difference of opinion exists as to whether it ought not to be in Latin, as our Pharmacopœias used to be. There appear to be many advocates for the use of the classical language, and some strong arguments are adduced in favour of it; but, on the other hand, it cannot be denied that it is important to make the descriptions of the substances and the processes treated of in the Pharmacopœia as complete and explicit as possible, and many of the terms of modern science, such as would be most suitably used in such cases, have no good representatives in Latin. It will be found that processes are often very imperfectly described in the Pharmacopœias that have been written in Latin, and this, I believe, has principally arisen from the inadequacy of the language to convey all that it was desirable to communicate.

2. *Arrangement of Matter.*—I believe the arrangement of the matter in the British Pharmacopœia has given universal satisfaction; at least I have not heard of anything having been expressed to the contrary.

3. *Nomenclature.*—No great or very important changes were made in the names applied to the medicines which are described in the present Pharmacopœia, yet some changes were thought to be necessary or desirable, and new names have therefore been introduced; the objects aimed at in their selection being "to adopt such as, with a due regard to conciseness, are most explicit and most likely to be understood, while at the same time they do not unnecessarily involve scientific theories that are liable to change." This applies especially to the names of chemical compounds. Some of the changes in chemical names were made with the view of establishing greater consistency among them, or, where this could be done without interfering with other more important considerations, to reconcile the names used with generally accepted theories or the prevailing practice among chemists. To a limited extent, some further changes in chemical names might perhaps be made, so as still further to reconcile them with the names used by scientific chemists, without interfering with the principles hitherto acted upon. I am decidedly of opinion, however, that the names applied to medicines in the Pharmacopœia ought not to be changed without strong grounds for doing so.

4. *Symbolic Notation.*—At the time the Pharmacopœia was preparing for publication, a new system of notation in chemistry was being introduced, but this system was not then so generally adopted or understood as to justify its use in the Pharmacopœia in the place of the older system which had previously been adopted. Under these circumstances it was decided to insert formulæ con-

structed according to both systems. But the new notation has now become so completely established among scientific men, especially in this country, that any reference to the old system has become unnecessary.

5. *Method of Representing Quantities.*—In describing processes the quantities of ingredients may be represented either by reference to the weights and measures established in use, or the proportional quantities may be expressed in parts. The latter method has been adopted in several foreign Pharmacopœias, but it involves the necessity of weighing liquids as well as solids; and although this has been the usual practice among pharmacists on the continent of Europe, it is not the practice in this country, and any attempt to introduce it here would probably meet with some opposition. If the proportions of the ingredients in formulæ for processes could be stated in parts by weight, or in some cases, if it should be thought preferable, in parts by volume, one of the difficulties in the way of introducing a new system of weights and measures would be thus removed.

6. *Method of Arranging or setting out the Formulæ for Processes.*—This is a point with reference to the construction of a Pharmacopœia that seems to me to be of some importance. The formula for a process should be so constructed and arranged as quickly to communicate and impress upon the mind of any person referring to it a knowledge of the ingredients and their proportions. A formula may be so arranged as to convey to the mind at a glance all the important points in connection with it, or otherwise arranged it may fail to convey the required information without repeatedly reading it over. The names of the substances to be used, the quantities if they can be definitely expressed, and the instructions for performing the process, should form separate parts of the formula, which should be so placed that each part is distinct from the others, and may be readily examined, either alone or in connection with that to which it relates. The use of figures rather than words for expressing quantities will be found greatly to facilitate a quick perception of one of the points in a process, for a knowledge of which reference is frequently made. A comparison of the formulæ for compound extract of colocynth as given in the present and preceding Pharmacopœias will serve to indicate the difference, in regard to the points alluded to, caused by difference of arrangement.

1864.

Take of Colocynth, freed from the seed, six ounces;
Extract of Socotrine Aloes, twelve ounces;
Scammony, or Resin of Scammony, in powder, four ounces;
Hard Soap, in powder, three ounces;
Cardamoms, freed from the capsules, in fine powder, one ounce;
Proof Spirit, one gallon.

Macerate the colocynth in the spirit for four days; press out the tincture, and add to it the extract of aloes, the soap, and the scammony. Distil off the spirit, and evaporate the residue by a water-bath to a pilular consistence, adding the cardamoms towards the end of the process.

1867.

Take of

Colocynth Pulp	6 oz.
Extract of Socotrine Aloes . .	12 oz.
Resin of Scammony	4 oz.
Hard Soap, in powder . . .	3 oz.
Cardamom Seeds, in fine powder	1 oz.
Proof Spirit	1 gall.

Macerate the colocynth in the spirit for four days; press out the tincture, and distil off the spirit; then add the aloes, scammony, and soap, and evaporate by a water-bath until the extract is of a suitable consistence for forming pills, adding the cardamoms towards the end of the process.

In the use of figures for expressing quantities, however, it is necessary to be very careful in guarding against the substitution of one figure for another, both in writing and also in printing. There is a greater liability to the introduction of errors in this way than there would be if the numbers were expressed in words. A few errors which have crept into the British Pharmacopœia, and passed through the press unobserved, appear to have originated in the accidental substitution of one figure for another. These were noticed in a recent number of the 'Pharmaceutical Journal,' and their correction has been authorized by the Medical Council.

I will now proceed to state the substance of my first report to the Pharmacopœia Committee of the Medical Council, dated June, 1868, in which remarks and suggestions are made with reference to some of the medicines at present described in the Pharmacopœia, and to others which it may be thought desirable hereafter to introduce.

Acidum Sulphurosum.—The liquid described in the Pharmacopœia under this name, and for the preparation of which a process is given, is a nearly saturated solution of sulphurous acid gas in water, but it is difficult to keep this solution for any length of time without loss of strength from the escape of some of the gas; and partly from this cause, and partly from the inconvenience attending the production of so strong a solution, it is found, as met with in commerce, to be of very variable strength. A weaker solution could be kept without so much liability to change or variation, and would, I believe, be better suited for general use in medicine. Instead of the solution as now ordered, containing 9·2 per cent. of the acid gas, I would recommend a 5 per cent. solution, which could be more easily made, and the strength of which could be more uniformly maintained.

Besides sulphurous acid in the free state, such as the aqueous solution contains, some of the acid and neutral sulphites are now frequently used in medicine, and might, perhaps, with advantage be introduced into the Pharmacopœia. The most important of these are—

Acid Sulphite of Lime, which is a solution of the very sparingly soluble sulphite of lime with excess of sulphurous acid, by which its solubility in water is considerably increased; and

Neutral Sulphite of Soda, which is freely soluble in water, and from which, by contact with any of the stronger mineral acids, sulphurous acid is disengaged.

Chloroformum.—The extensive use which is made of chloroform as an anæsthetic agent, and the danger that may result from its employment in an impure state, and especially if contaminated with products resulting from its decomposition, render it very important that the authorized process for its preparation should yield it in a state in which it not only is free from impurity when recently produced, but will remain so for a considerable time afterwards. A statement having been made to the effect that chloroform, prepared according to the Pharmacopœia process, had on several occasions become unfit for use within a few weeks after its production, I made a careful investigation of the subject, and am fully satisfied that the decomposition alluded to was caused by some deviation from the instructions given, and most likely by the use of impure sulphuric acid in purifying the crude product. I had several quantities of not less than four pounds each, made by the Pharmacopœia process, following rigidly the instructions given, and the resulting chloroform not only answered to all the tests, but has remained free from any symptoms of decomposition. One of these samples has been kept now for more than twelve months exposed to strong light. On the other hand a sample, in the purification of which sulphuric acid not perfectly free from nitric acid was used, began to show symptoms of the usual decomposition, in which acid fumes are emitted, in a few weeks after it was made. I have found that pure sulphuric acid, with the addition of three drops of nitric acid to every fluid ounce, if used in the purification of chloroform, will cause this decomposition to take place. Dr.

Christison was, I believe, the first to suggest that a tendency to decomposition was imparted to chloroform by using, in its purification, sulphuric acid in which nitric acid was present. I find a statement to this effect in a short paper of Dr. Christison's, published so long ago as 1850, in the 'Monthly Journal of Medical Science.'

Cinchonæ Cortex.—In consequence of the great difference existing in the quantity of alkaloids contained in different samples of cinchona bark belonging to the same species, and not distinguishable by their ordinary physical characters, the Pharmacopœia requires that the bark of each species should yield, by a process described, a certain minimum proportion of alkaloid. This method of testing the strength, and thus judging of the efficacy of natural products which are not of a definite chemical nature, affords, wherever it is applicable, a valuable means of control over the quality of commercial drugs. In the case of the cinchona barks it is quite applicable, but some doubts have been expressed as to whether the processes given in the Pharmacopœia for testing the cinchona barks, are the best that could be devised for that purpose. They differ from processes I have been accustomed to adopt in testing barks, but the trials I have made of them have given satisfactory results. In one respect only would I suggest a modification of the method of operating. Instead of weighing the alkaloids as obtained by the evaporation of their solutions in ether or chloroform, and afterwards ascertaining that they are soluble in diluted sulphuric acid, I would dissolve them in the acid before weighing, then precipitate them with ammonia, and weigh the dried precipitate. In this manner they would be more easily obtained in a definite and uniform state, for in evaporating the ethereal or chloroformic solutions, it is difficult to remove the last traces of the solvent, whereas the precipitated alkaloids are very easily dried. The processes as given were introduced into the Pharmacopœia in 1864.

Emplastrum Plumbi Iodidi.—This plaster was introduced into the Pharmacopœia at the suggestion of a member of the Medical Council, and several processes for its preparation having been suggested and tried, one was selected, which appeared at the time to give the best result. It has been found, however, that the plaster made by this process, which, in the first instance is of a bright yellow colour, gradually becomes paler, and ultimately almost colourless. This obviously arises from the action of the soap contained in the soap plaster, which is one of the ingredients, on the iodide of lead, resulting in the formation of iodide of sodium. When made with resin plaster alone, or with a mixture of resin plaster and lead plaster, the decomposition does not occur.

Extractum Ergotæ Liquidum.—The process by which this preparation is directed to be made, involves the use of a considerable quantity of ether, which is applied to the ergot for the purpose of depriving it of its oil before submitting it to the action of warm water for the extraction of what is soluble in that menstruum. The product is a solution of those constituents of the ergot which are soluble in water, the oil being carefully excluded; but the method of producing it is considered by many persons, and I think justly, to be unnecessarily costly, and it has been suggested that a similar and equally efficacious preparation would be obtained if the exhaustion of the ergot with ether were omitted, as the oil is not to any sensible extent soluble in water.

Ferrum Redactum.—This preparation is intended to consist essentially of metallic iron in a finely divided state, but the presence of a small quantity of magnetic oxide of iron is recognized, as it would be very difficult to ensure entire freedom from such admixture. Reduced iron is frequently prescribed, and much reliance is placed on its efficacy as a remedial agent. It is easily acted upon by the acids present in the stomach, and, if it be in a sufficient state of purity, pure hydrogen gas is evolved during its solution. The most important defect to which it is subject is, that if not properly prepared, it may give off sulphuretted hydrogen gas when acted on by acids, to a sufficient extent to materially influence the result of its action. A test ought, therefore, to be given for indicating this defect when it occurs.

A slight modification might also with advantage be made in the process for its production, by which freedom from the presence of sulphur in the product may be more completely ensured than it is in the process as at present given. It is directed to be made by exposing hydrated peroxide of iron at a red heat to the reducing action of hydrogen gas; but, as the hydrated peroxide of iron of the Pharmacopœia is made by precipitation from a solution of persulphate of iron with caustic soda, this, as produced by manufacturers, generally retains a small portion of sulphate, which is not completely washed out in the process, and this sulphate is afterwards reduced to sulphide by the hydrogen during the conversion of the oxide to reduced iron. The liability to such a result would be obviated if the oxide used in the process were directed to be obtained from chloride of iron by precipitation with ammonia.

Hydrargyri Iodidum Viride.—It is deserving of consideration whether this preparation should not be omitted from the Pharmacopœia, on account of its great liability to change.

Hydrargyrum Ammoniatum.—This preparation, the white precipitate of pharmacy, is directed in the Pharmacopœia to be made by adding ammonia to a solution of corrosive sublimate. There is, however, another method of preparing white precipitate, which consists in using sal ammoniac and carbonate of soda in the place of ammonia; but when made by this process the product, although similar in appearance to the other, differs in composition, and contains a smaller proportion of mercury. It has been shown that some of the white precipitate of commerce has the composition and properties of that made with sal ammoniac, and, as the process by which this is produced is less costly than the other, the product obtained by it from a given quantity of perchloride of mercury being greater, there is an inducement for manufacturers to adopt it. The Pharmacopœia preparation may be distinguished from that made with sal ammoniac by the fact that it may be entirely volatilized on the application of heat *without its being fused*, while the unauthorized preparation *fuses before it volatilizes*. This property ought to be indicated among the tests given in the Pharmacopœia.

Linimentum Potassii Iodidi cum Sapone.—Some alteration in the directions for preparing this liniment appears to be called for, as much difficulty has been experienced by practical pharmaceutists in producing satisfactory and uniform results from the process as described in the Pharmacopœia.

The processes for some of the other liniments, such as *Linimentum Hydrargyri* and *Linimentum Terebinthinæ Aceticum*, would also admit of improvement.

Liquor Magnesiæ Carbonatis.—This preparation would, I think, be improved by reducing its strength. The process as given in the Pharmacopœia yields a solution containing thirteen grains of carbonate of magnesia to the fluid ounce, but it can only be kept of this strength while it is fully charged with carbonic acid gas. On exposure to the air, some of the gas escapes, and carbonate of magnesia is then deposited. A solution containing ten grains of carbonate of magnesia in the ounce would be more easily made, and much more easily kept for use without alteration of strength.

Opium.—The great importance of opium as a therapeutic agent, and as the source from which many valuable medicines are produced, and the variation in strength and composition to which the commercial drug is subject, render it very desirable that those who use opium in the preparation of medicines should test its strength before applying it for such purpose. A method of doing this is described in the Pharmacopœia, but the test given occupies so much time in its application that, even if in other respects it be unobjectionable, this would greatly limit its usefulness. The subject is one that merits a thorough investigation, for the purpose of ascertaining what method of testing commercial opium is best suited to the circumstances under which the test is required to be applied, as indicated in the Pharmacopœia.

Mistura Scammonii.—It has been suggested that this mixture would be improved by the addition of a little gum, which would contribute to hold the resin of scammony suspended in the liquid.

Pix Burgundica.—Since the publication of the Pharmacopœia, the result of inquiries made relative to the commercial history of Burgundy pitch has been published by Mr. Hanbury, from which it appears that although the spruce fir grows abundantly in Switzerland, there is no resinous exudation from it collected there at the present time for commercial purposes, and that true Burgundy pitch is produced in Germany, and also in Finland. The statement in the Pharmacopœia that Burgundy pitch is imported from Switzerland is therefore incorrect.

Bismuth and its Compounds.—A good deal of discussion has taken place with reference to the processes and tests described in the Pharmacopœia for purified bismuth, and some of the bismuth compounds, but no material defects have been proved to exist in them; and although one or two of the suggestions that have been made are deserving of attention, no facts have been adduced that should cause any want of confidence in the sufficiency of the Pharmacopœia processes for producing good and efficient preparations.

The foregoing remarks relate principally to medicines which are at present included in the Pharmacopœia. In addition to these, there are some medicines which claim to be noticed on account of the extent to which they are employed by medical men, or the value which is attached to them by those who have given them a trial. Attention is directed to them here for the purpose of raising the question as to whether they are deserving of a place in a future edition of the Pharmacopœia.

Lactic Acid appears to play so important a part in some of the processes occurring in the animal body, that its use in medicine will probably be extended as further attention is given to its therapeutic action, and to the best forms for its administration.

Acetic Ether is one of the most agreeable of the compound ethers. It is a good solvent of cantharidine, and might, with advantage, be substituted for the mixture of acetic acid and ether in the preparation of liquor epispasticus. It would also admit of other applications in medicine.

Chlorodine.—The medicine sold under this name is very extensively used, and its reputation, even among medical men, appears to be rather upon the increase than otherwise. Although strictly a proprietary medicine, the composition of which has not been publicly avowed, it is nevertheless generally known to pharmaceutists what the principal ingredients in it are, and there are several makers of it who produce and sell under the name of chlorodine, compounds which nearly, although not entirely, agree in their general characters and properties. Attempts which have been made to simplify its composition have not hitherto resulted in the production of an equally efficacious medicine. An alcoholic solution of chloroform and acetic or other ether, with oil of peppermint, hydrocyanic acid, and a salt of morphia, appear to be the principal active ingredients, and these are made into a syrup with some uncrystallizable sugar.

Citrate of Magnesia.—The preparation which is very extensively sold by druggists under the name of *granular effervescing citrate of magnesia*, is not what its name indicates, but is merely or almost exclusively a mixture of citric and tartaric acids with bicarbonate of soda, corresponding to the *effervescent citro-tartrate of soda* of the Pharmacopœia. The true citrate of magnesia is seldom used in this country, but on the Continent it is esteemed a valuable medicine.

possessing the purgative properties, without the nauseous, bitter taste, of the sulphate and some other salts of magnesia.

Pepsine.—The medicine generally sold under this name in the form of powder, is a mixture of starch with a peculiar organic principle and acid salts obtained from the fresh stomachs of animals, principally pigs and sheep. A process for its preparation is given in the French Codex, and something of a similar description might perhaps be introduced with advantage in our Pharmacopœia.

A cordial vote of thanks was then presented to Professor Redwood, and, owing to the lateness of the hour, the discussion upon the paper was adjourned till the next meeting, on the 5th of January.

PHARMACEUTICAL SOCIETY, EDINBURGH.

North British Branch.

The Second Meeting of the present session was held in St. George's Hall, on Friday evening, 17th December. There was a full attendance. Mr. Aitken, President, in the chair.

Mr. William Gilmour read a paper "On Metrical Weights and Measures," in which he remarked that the importance of the subject was shown by the interest it had long excited among scientific men, and by the fact that it had lately been the subject of a Royal Commission in our own country, while other countries had already adopted, or were about to adopt it. It was the more important to the chemist and druggist, as it might be expected from his acquaintance with scientific subjects that he would take a prominent part in bringing about any alteration that was found necessary or desirable in the system now in use. The present system, he said, was very defective, and as its defects were acknowledged in the Pharmacopœia, it could scarcely be expected that it would be permanently retained, especially as the tendency of the day was evidently in favour of a universal system. In a British point of view the grain, as a unit, had much to recommend it, especially in its relation to pharmacy; but, as a whole, the system of weights and measures employed in pharmacy was that which in this country presented the most glaring defects. The Medical Council, in the compilation of the Pharmacopœia, not only admitted the defects of the recognized system of weights and measures, but introduced the thin edge of the metrical system, as an alternative, and the only alternative system. As the question seemed to rest between a further alteration of our own system and the adoption of the metrical system, it would probably be admitted that the former alternative would be quite as difficult although not so satisfactory as the latter. That the issue lay between these two systems appeared from the following considerations:—1st. That the metrical was the only alternative system alluded to in the Pharmacopœia. 2nd. That it had received the approbation of most scientific men, and had been adopted by more countries than any other system. 3rd. That the Government had proposed its legalization, and gave it a permissive sanction. And 4th, that the Standards Commission had recommended its introduction and use. It would be found, on applying a few practical tests to the two systems, that the metrical had a decided advantage over the other. Thus with reference to weights, in the metrical system, taking the gramme for its unit, there was a regular ascent and descent by easy gradients of tens, whereas in the British system, taking the grain for its unit, it was quite otherwise, as there was no integer between the grain and the ounce, while the latter was not even a multiple of the former. In ordinary commercial transactions the inconvenience arising from this anomaly was not felt as it was in the more delicate operations of chemistry and pharmacy. With reference to measures of capacity also, in the metrical system not only was there a uniform and definite relationship between the different units, but also between these and the units of weight, whereas in our system such relationships did not exist, and confusion was even created by the application of the same names to measures of weight and capacity that bore no definite relationship to each other. This sometimes gave rise to uncertainties, and possibly to mistakes. He did not say that uncertainties might not arise in the use of other systems as well as our own, and it might appear ungrateful to find fault with a system which afforded the facilities of our measure-system for the purposes of dispensing. He suggested that it might be possible to engraft a measure-system similar to ours on the French system. One of the chief arguments in favour of the metrical system, was its adaptability to various purposes and to all kinds of calculation. The fundamental bases of the French and English systems were referred to and compared, and allusion made to the circumstance that the unit of measure in the French system, the metre, as first determined by the measurement of the arc of the meridian, had subsequently been found to be incorrect. This, however, was a comparatively unimportant point. The system was firmly established, and its adoption in this country could only be a question of time.

After some remarks on the proposed system, a vote of thanks was moved by Mr. Ainslie to Mr. Gilmour for his paper, and the manner in which the subject had been illustrated by table and diagram.

Mr. John Mackay then made some remarks on the proposed regulations for keeping and dispensing poisons, and the additions to be made to the list of articles at present in schedule A. of the Pharmacy Act. Mr. Mackay first referred to the regulations as to keeping and dispensing, with the arrangement of which the Society had to deal. He read the recommendation of the Council on this point, stating that the matter would be brought before the Annual Meeting of the Society for the purpose of being finally considered and decided. He then stated the proposed additions to part i. and ii. of schedule A. attached to Pharmacy Act of 1868.

At the close of Mr. Mackay's remarks, a long discussion ensued, in which several members took part. A considerable number spoke strongly against the adoption of any of the three proposals for keeping and storing poisons, and also against the use of any distinctive bottle for liniments, lotions, or embrocations. In replying to the various objections made by the different speakers, Mr. Mackay suggested that in order to meet the views of those who were antagonistic to these regulations, and as there was abundance of time, a meeting had better be called of the members of the Society in Edinburgh, who might, if they thought proper, embody their views in a memorial, which could be forwarded to the Council to form part of the proceedings at the General Meeting of the Society in London.

The Secretary submitted specimens of the patent compressed eggs, which had now been so successfully produced in America, as well as dried albumen and yolk. These had all been prepared two years and a half ago, and were still quite suitable for the baker, and most domestic purposes.

The attention of the meeting was then directed to the following twelve interesting specimens, which had been presented to the Society's museum here by Professor Archer: —Long-leaved Buchu (*Barosma serratulata*), Calabar Bean (*Physostigma venenosum*); 9 Minerals from salt mine of Strassfurt, near Magdeburg:—Massive Boracite, Sylvite, Polyhalite in Rock Salt, Kamite, Kieserite, Carnallite, Tachhydrite, Rock Salt, Rock Salt with gypsum, Cape Aloes. On the motion of Mr. Mackay, a hearty and unanimous vote of thanks was awarded to Professor Archer for his handsome contribution.

PROVINCIAL TRANSACTIONS.

ABERDEEN ASSOCIATION OF ASSISTANT CHEMISTS AND DRUGGISTS.

The half-yearly General Meeting of the above Association was held in the St. Nicholas Lane Hall, on the 11th of November; Mr. J. Bertie, Vice-President in the chair. Mr. William Donald, Secretary, read a report of the transactions of the Association during the preceding six months, showing that during that time a number of interesting subjects had been brought before the Association in papers read by members, including a discussion on the repealed clause in the Pharmacy Act, relating to the prohibition of medical men from keeping open shop, also a discussion on the merits of Homœopathy, along with various other subjects.

The following office-bearers were then elected for the ensuing six months' session:—President: Mr. James Thom. Vice-President: Mr. J. Bertie. Secretary and Treasurer: Mr. W. Donald. Committee: Messrs. Gordon, Auchinachie, Webster, Cassie, Ross, and Munro.

Papers on the following subjects will be read during that time by members:—"Prescriptions," Mr. Ross. "The Value of Medicine," Mr. Bertie. "Infusions and Decoctions," Mr. Mathieson. "Botany; embracing the Root, Stem, Leaf, and Flower," Mr. Munro. "Potassium and its Compounds," Mr. Thomson, "Stimulants," Mr. Hosie. "Pharmaceutical Education," Mr. Thom. "Narcotics," Mr. Donald. "Geology," Mr. M'Cann. "Vegetable Alkaloids," Mr. Lunan. "Adulterations," Mr. Webster.

GLASGOW CHEMISTS AND DRUGGISTS' ASSOCIATION.

Third Meeting, Session 1869-70.

The usual Fortnightly Meeting of this Association was held in the Mechanics' Institution, Bath Street, on the evening of Thursday, the 25th November, 1869; the newly elected President, Mr. John M'Millan, presiding. The attendance was numerous. After the minutes of last meeting had been read and approved of, the Chairman, in a few appropriate remarks, introduced Mr. James M'Millan who read a very lengthy paper on "Science," which he delivered in a very able manner, and was frequently applauded by the members. Owing to the late hour at which the paper was finished, there was no discussion. A hearty vote of thanks was awarded Mr. M'Millan for his essay, and also to Messrs. W. and R. Hatrick and Co., wholesale druggists, for their handsome donation towards the funds of the Association. This being all the business, the meeting broke up.

Fourth Meeting.

The Fourth Meeting of this Association took place on Thursday evening, 9th December, 1869, in their usual place of meeting; Mr. John M'Millan, President, in the chair. There was a good attendance of members. The minutes of last meeting were read and adopted.

Mr. J. Campbell, on being introduced by the Chairman, read a paper entitled "Comments on the Retail Trade," in which he alluded to the early existence of dispensers of medicines, stating that "pills and potions were in requisition prior to the pickaxe and shovel." "Like other sciences of ancient date," he observed, "it has kept pace proportionate to the advancement and progress of civilization, and at the present time is developed to a point of maturity." This he proved by referring to existing accounts of the miserable state of ancient pharmaceutical establishments, and the very different condition of those of the present day. He thought, however, that even in modern times there had been too great a disregard of some important details, and especially with regard to the establishment of a uniform system of charges for medicines, and a general price-mark for prescriptions.

A very animated discussion followed the reading of the paper, in which a large number of those present took part, the assistants being generally in favour of shortening the hours of business, while the principals advocated the adoption of a general price list, at the same time expressing the opinion that higher salaries and shorter hours of labour would soon follow such an arrangement.

The President in his remarks referred to the efforts made in other towns to establish a more uniform scale of charges than existed at present, and suggested that the Edinburgh price-mark "mel boracis" might with advantage be adopted.

A member gave notice that at the next meeting he would bring forward a motion to the effect that a Committee be appointed to endeavour to get a uniform scale of charges agreed to at once.

HALIFAX AND DISTRICT CHEMISTS AND DRUGGISTS' ASSOCIATION.

The First Annual Meeting and Dinner of the members of the above Association was held on Thursday, December 11th; Mr. Dyer, President, in the chair, who, after the usual loyal toasts were proposed, called on the Secretary to read the report of the year's proceedings.

The Secretary, Mr. Hebden, then read the following report:—"The first subject which came under your committee for consideration was the removal of the great difference in the rates of charging in the dispensing of prescriptions. This matter was strongly urged for their settlement at the first general meeting of the body after the inaugural dinner. They so far exerted themselves in this matter by consulting the opinions of the different members of the trade, by the framing of a moderate minimum rate, and by laying aside their individual wishes to consult the wishes of the body, that they were able to present to a general meeting, held on the 14th of April last such a list of charges as, with only two items, "which were agreeably settled," met with the unanimous support of all present, and with the signatures of every member of the Association with only two exceptions.

"Your committee have great pleasure in stating that the plan has been more successful than was at first anticipated. They consider this due, not only to the honourable spirit that exists amongst you, but also to the imperative necessity of such an arrangement. Fair prices are the great means to ensure accurate and skilful dispensing of pure and reliable drugs.

"On the 1st of March the "Petroleum Act" came into force. By its operations the trade would be subjected to great expense in the payment of a licence, in the construction of certain vessels for its storage, etc., all of which were precautions intended only to apply to dealers in large quantities of such inflammable distillates, yet in its legal operation it really affected the sale of benzine, benzilline, etc., and placed the trade in an unnecessary and unpleasant position.

"Your committee at once took the matter in hand, and communicated with the Secretary of the Pharmaceutical Society for advice, which that gentleman kindly and promptly forwarded. They appointed a deputation to wait upon the mayor and town clerk, consisting of our worthy President, Messrs. Jessop, Farr, and myself. The deputation had an interview with those gentlemen, and explained our peculiar position and its injustice, and pointed out to them that the Act was never intended to apply to us. This was so effectually done as to receive the assurance of the mayor that the trade should not be compelled to obey the stringent requirements of the Act, so long as they (the trade) kept these inflammable bodies in such small quantities, and under such precautions as then stated and exhibited. This would leave the matter, pending further instructions from London, of which the Association should receive early intimation.

"Your committee are able to state that they have made satisfactory arrangements to hold the future meetings of the Association at the Mechanics' Institute, and desire to urge on the members more regular attendance at the general meetings. These meetings may be the most powerful means of creating feelings of friendship and brotherhood amongst the members, and for the exchange of ideas in reference to trade matters. The committee therefore earnestly wish those members who have been conspicuous for their absence to favour them with their presence. On purpose to raise the status of the trade, and to render these meetings more attractive, they are making efforts to induce members to give papers on scientific and social subjects of the trade, and they hope such papers will have earnest and large audiences.

"At a general meeting, September 8th, the arrangements which had been made with the Principal of Haley Hill College, for the instruction of our assistants and apprentices in Chemistry, Latin, and Botany, were placed before the members. The very kind manner in which the science teachers of that college met the wants of the Association, in offering to shape their instruction with a view to the trade examinations, was felt to be a very valuable acquisition, and your committee pressed on the members to give them speedy and cheerful support, and to induce their young men to a regular attendance of these classes. Your committee feel deep regret in having to say that these classes have not been supported as well as was expected, or as they deserve, and they now take the opportunity of again urging on you to do your utmost to repay this defect by stimulating your young men, by telling them they can never be able to pass their examinations unless they attend them, and the sooner they commence the easier will be the trial; and your committee, as a further stimulus, purpose offering annually prizes for competition in these essential subjects. The committee would also respectfully point out to you that your interests will be best cared for by one who sees you care for his, and that your trade will prosper better by well-trained and intelligent youths than by nonentities. They say this to induce you to place every opportunity for your young men attending these duties.

"Mr. Shaw kindly offered to give the young men a lecture on the study of materia medica. Your committee have great pleasure in stating that this lecture was well attended, and so far a success as to receive the promise of another one early in next year. Your committee are indebted to Mr. Shaw for his kindness.

"The cabinet of specimens of materia medica which is here for your inspection is the gift of Messrs. Evans, of Liverpool. That it is unique you will all acknowledge, and their kindness you will, I am sure, appreciate. To this cabinet they have also added a work on materia medica, and on the examinations of the Pharmaceutical Society.

"At our last general meeting a resolution was passed to invite the physicians of this town to dinner. In compliance with that resolution invites were sent, but your committee are sorry to say that a want of harmony prevents the whole of the faculty being present on this occasion.

"Your committee have especial pleasure in calling your attention to the state of the finances, which the Treasurer will lay before you."

Mr. Rendall, of Sowerby Bridge, proposed the adoption of the report, which was seconded by Mr. Atkinson, Brighouse, who stated the great pleasure he felt in meeting his Halifax brethren. He had also the great pleasure to say that, in their journey to the dinner, an understanding had been come to between himself and the other chemists of Brighouse, to close their places of business an hour earlier than had been customary. He felt this would be a great relief to them, and also to their young men, who would have more time to devote to their studies.

Mr. Holroyd then proposed, and Mr. Farren seconded, the following gentlemen to be the officers and committee for the ensuing year:—

President, Mr. Dyer. *Vice-Presidents*, Messrs. Stott, Shaw, and Farr. *Secretary*, Mr. Hebden. *Treasurer*, Mr. Pollard. *Committee:* Messrs. Jessop, Brierley, Rendall, Kershaw, Brooke, and Denton.

The President, in returning thanks for the honour which the members had done him, declared the great interest he felt in the success of the Association. Whatever movement that had a tendency to produce feelings of respect, and dispel the shy and jealous conduct which was wont to characterize the trade, would have his hearty support. All efforts to infuse into the body a taste for a more accurate acquaintance with pharmaceutical processes, and to extend the scientific knowledge of the trade, would receive from him all the assistance which his numerous engagements would permit. He felt very sorry that the committee could not present to the members such a list of papers, lectures, etc., as was done in larger towns. They had not such ample means at their disposal, but what little means they had would be used in the new year to the utmost extent; and, whilst he expressed his admiration for those gentlemen who so regularly attended every meeting, he also hoped that those who rarely if ever attended would give, if only by their presence, some greater support to the committee. The great desideratum of the day was education; their young men absolutely needed it,—of course I mean trade education,—and the members might all the more sympathize and encourage them if at these meetings the higher branches of the trade were introduced for discussion, and a feeling created amongst the members for such pursuits. Those members whose opportunities and whose tastes had been favourable to a more extended acquaintance with the scientific division of the trade he hoped would not "keep their light under a bushel," but would at once freely and gladly place their abilities before the members, and their brethren would repay them with that respect which was the aim of all good men. The committee, as the report stated, had made great efforts to make the classes for their young men a success, but had met with only moderate success. Nothing daunted, they would during the next year try to cultivate a higher spirit amongst the members; and even the most supine, or the most devoted selfish worshipper of Mammon, would not be able to resist the influence of the energy and nobleness of the aims of the committee. They yet hoped to have every one in the Association helping in the work. The benefits of the Association he had felt very much during the little time it had been in existence. He only wished it had been founded a quarter of a century earlier. Faces were now familiar to him which were total strangers before; and, as the restraint of days for ever gone by had yielded to the influence of their monthly meetings, he had found such traits of character in his neighbours, such respect and appreciation of each other's society, such noble, earnest longing to raise the status of the trade, that, were the Association to melt away to-morrow, he could never forget them.

The meeting was then addressed by Messrs. Stott, Shaw, and Farr upon matters of trade interest, after which Mr. Jessop proposed the health of the President, when the meeting terminated.

HULL CHEMISTS' ASSOCIATION.

The Annual Dinner of the Association was held at the Crossley's Hotel, on Thursday, the 25th of November, 1869; Mr. Anthony Smith in the chair (in the unavoidable absence of the President, Mr. Baynes), when a room full of chemists met and spent a very pleasant evening.

After the usual loyal and other toasts, the Honorary Secretary (Mr. Bell) and others pleaded for the better and more general support of the Benevolent Fund of the Pharmaceutical Society, observing that as the Fund was accessible to every member of the trade, and that any chemist, who through ill-health or other unforeseen circumstances, might become the recipient of it, it was the duty of every chemist when in health and prosperity to remember, in a substantial manner, that all were not equally fortunate, and subscribe something every year, be it ever so little, to make this Fund a source of pride to those whose hearts are large enough to support it, and a comfort to those who needed its assistance.

MANCHESTER CHEMISTS AND DRUGGISTS' ASSOCIATION.

The Second Monthly Meeting of the session was held in the Memorial Hall, Albert Square, on Friday, December 3rd, Mr. Councillor BROWN, Vice-President, in the chair. One new member and four associates having been elected, Mr. HAMPSON read the following paper on "The Condition and Prospects of Pharmacy in its Relation to the Medical Profession":—

Mr. Chairman and Gentlemen,—The unquestionably supreme importance to us of the subject I have chosen for my paper, is, I hope, a sufficient reason and excuse for my addressing you upon it. Our success as pharmaceutists, and all that gives our trade the odour of a profession distinguishing it from other trades, is almost wholly circumscribed by, and dependent upon, medical men, and the relationship we bear to them, and we cannot hope to elevate British pharmacy to the dignity of anything approaching a profession, or raise it to the position we wish, unless our connection with the medical profession be very much enlarged and improved.

From their kindred nature, under favourable circumstances, medicine and pharmacy ought ever to be united in friendly co-operation, and though pharmacy is subordinate to medicine, it must continue to be its most constant and faithful handmaid, whilst disease is combated and health restored by means of the materia medica. We have need only to look at the sad numeric page periodically furnished by the registrar-general, or note the vast amount of disease always present, to be convinced that, notwithstanding the spread and application of increased sanitary knowledge, the day is far distant when doctors and pharmaceutists will have become things of the past.

In the battle with disease and death we occupy a much humbler position than the physician, yet the post we fill is one of most delicate honour and trust. We are trusted to prepare the ammunition to be used in the conflict, and the issues depending upon our knowledge, skill, and exactitude, raise the post I have described as humble to one of the highest trust.

This estimate of our responsibility clearly precludes the use of anything, either in means or material, but the best obtainable. In the compounding of medicines there ought to be no such thing as second quality. I need scarcely mention the word adulteration, for we must all scout that; and in all our preparations the only safe plan is to aim at the undeviating standard of the Pharmacopœia. By loyal obedience to this rule we shall attain a uniform result; and it will be no longer possible, within the limits of truth, for any medical man to affirm either in the 'Lancet' or any other journal, that the medicines prepared from one prescription, compounded at different establishments, all differed essentially.

The passing comments in the medical journals on the conduct of our trade, and especially in reference to the misadventures which unfortunately do occasionally occur, as well as in the marked opposition which the passing of the Pharmacy Act aroused in the minds of many of the profession, evidence, I regret to say, the existence of a certain degree of soreness, and a sense of distrust towards us. It is quite as well to analyse this unfavourable feeling, and if possible, without in any way sacrificing our independence and self-respect, to transform it into a friendly and mutual appreciation.

You all know the principal reasons accounting for this inharmonious relationship, but simply knowing the reasons will not remove them.

It is absolutely necessary, and now that a new, and I hope a brighter, day has dawned on the pharmaceutic horizon, it is a most suitable time to attempt to bring about a better state of things. Since it is no longer optional for those beginning business to be trained according to a scientific standard, we are deeply interested in placing our connection with the medical profession on a stable and natural footing. The rising generation of Pharmaceutists, who will gradually fill our vacant ranks, thinned by advancing age, will not, I am convinced, after having passed a professional curriculum, be satisfied, or suited either, to be mere adepts at mixing paint, or in dealing out goods from the incongruous stocks which fill the chemists' shops of the present day.

I would not, if I could, draw a line too narrow or rigid, or presume it possible to transform, as it were, "in the twinkling of an eye," the chemist's shop of to-day into the pure and simple pharmacy of to-morrow; but if we are to be chemists in pharmacy, let us at least obtain our true sphere of work, viz., the dispensing and preparing of medicines. We must remember, too, that the trades about us are gradually but surely encroaching on the miscellaneous branches of our business, and have only need to mention the articles of soap, perfumery, pomades, etc., which at one time were almost exclusively sold by us, to confirm us in the necessity of increasing what may be termed the distinctive and legitimate part of our business.

As an illustration of especial interest to the Manchester chemists, let us estimate how much of our proper work we do here in Manchester.

There are in Manchester and Salford, including the suburbs, about 246 chemists, and 234 physicians and surgeons. As far as I can ascertain, only 46 of the latter write prescriptions, and the remaining 188 dispense their own medicines. Supposing each prescribing medical man writes ten prescriptions a day,—and I don't think he writes more, if a daily average could be taken,—there would only be two a day for each chemist in Manchester and Salford to dispense. If, on the other hand, the medical men of Manchester and Salford ceased to dispense their own medicines, and, as a consequence, we had the dispensing to do, if my estimate be a correct one, each chemist would then have about ten prescriptions a day to dispense. This would be a very pleasing transformation, and would that I had the power to call it forth!

This rough dip into statistics educes figures which are anything but satisfactory or assuring. In the majority of towns the number of prescriptions dispensed by chemists are very much less than here, and in some towns a prescription is seldom seen.

With this condition of things prevailing, how can we expect much real or abiding interest, excepting in so far as the law requires, in pharmaceutic knowledge or attainment? and the educating of a host of young men at this time to a Bloomsbury Square proficiency, is something like teaching navigation to a sailor without giving him the chance of seeing the ocean, or of ever being afloat. In truth, there is only a very insignificant and inadequate demand for the educated pharmaceutist; and it is utterly impossible for the great majority in the trade to attempt to live upon the scanty amount of genuine pharmaceutic business which exists. We may attempt to rear with becoming pleasure schools of pharmacy, and have learned professors to teach the needed science; but unless there be a demand created for the trained pharmaceutist, the knowledge gained will not bear its wonted fruit, and will only be acquired like a painfully imposed task, and, because found practically needless, will soon be forgotten again.

Partly in self-defence, and partly as a result of usage, the chemist, in order to make up a paying sufficiency of business, and to fill a gaping void through which the wolf might creep, is compelled to prescribe himself in lieu of dispensing the prescriptions of medical men, which are not forthcoming; and some even enjoy a reputation little inferior to medical men. It is especially the chemists located in the poorer quarters of our towns who prescribe to a large extent; but I doubt if there be one present to-day but who prescribes—though the degree may be small by some of us—in one way or another. And have we to stand on our defence for so doing? However, it is quite as well that we understand each other on this question; and it is equally well that medical men understand it too.

I do not defend, but deprecate, indiscriminate and imprudent prescribing by the pharmaceutist. Prescribing is not his vocation; and, if circumstances were propitious, I would say, "never prescribe again." But he cannot immediately ignore the authority of custom, or the demands of the public,—and last, but not least, the sustaining revenue it affords.

The poor particularly, and a great many of the middle class as well, seek the chemist's aid for the treatment of simple ailments, and I have no doubt very frequently with advantage; and I believe if the reputed evil resulting from their confidence were very appreciable, the confidence would soon come to an end, and the medical man be alone consulted.

The thoughtful and best educated amongst us, and those who know most of the wonderful and mysterious delicacy and intricacy of the human organism, and the closeness with which one disease simulates another, will most willingly admit that it is a grave thing indeed to be trusted with the curing of disease, even when the physician is ripe in experience and skill; and they will not readily risk their peace of conscience by undertaking so serious a responsibility with imperfect and inadequate knowledge.

Having, as it were, freely admitted the standing indictment so often laid against us by medical men, I must not forget the many extenuating circumstances of our somewhat anomalous, and I hope transitionary, position.

The first, and a very important, plea we can offer is that of custom. The public, for a very long period, has largely depended upon the chemist for the removal of minor ailments, and has not yet lodged complaint against him. The second plea, and the one that is the key of the position, is that medical men overstep the just limits of their vocation, to a far greater extent than we overstep ours, by dispensing, I should say, nine-tenths of all the medicines compounded in the country, and in keeping open surgeries, or rather open shops, for retailing drugs; and that they, in many ways, to a serious extent, encroach upon and compete with us in what we believe to be our special business.

This is a very unsatisfactory condition of affairs, and it will require all our best efforts to apply a suitable remedy.

Both the medical man and the pharmaceutist occupy false ground, and by so doing stand in their own light. The art of healing, as well as the science of pharmacy, if I may so term it, suffer and are delayed a higher development by this maladmixture of duties. Medical men are equally interested with us in bringing about a better arrangement, and they have long felt dispensing to be irksome and burdensome after having visited their daily round of patients, and I believe many are anxious to give up the practice.

It is natural, too, to expect that where everything is devoted to the skilful preparation and to the best storing and choosing of drugs, as in a well-appointed pharmacy, the medicine there compounded will be superior, more reliable, and consequently more efficient and curative. It is likewise notorious how very indifferent is the compounding in many surgeries, and that the office of dispenser is often filled in a very unsatisfactory manner. Besides the vast gain to patient and physician afforded by better dispensing, and the use of a much wider range of remedies almost unattainable in ordinary medical dispensing, by giving up the compounding to the chemist the medical man would relieve himself, not only from a somewhat undignified and unprofessional drudgery, but from a great amount of serious and constant responsibility.

It appears to me, gentlemen, that the time has come, or is close at hand, when we may consistently ask the medical man for his countenance and co-operation in our endeavour to build up British pharmacy to an elevation deserving the name of a profession, or at any rate to that condition of development whereby he, as well as ourselves, will receive the benefit; he in more skilful, scientific, and suggestive help from us, and we in the satisfaction and advantage of having reached our true position as trusty aids in the amelioration of suffering and in the curing of disease.

We desire to have the dispensing of prescriptions—pardon me speaking for you as well as for myself—free from any obnoxious percentage arrangements, which I regret to say are sometimes entered into by medical men and chemists. Apart from the impolicy of such arrangements, which are liable to result in disadvantage to the patient, we consider ourselves fully and wholly entitled to the somewhat scanty imbursement that rewards us for the risks, responsibility, and trouble of compounding.

There has been on the part of the profession a certain degree of doubt as to the skill and capacity of pharmaceutists, and probably this doubt has prevented some from giving up their dispensing. This deterrent influence can scarcely be said to operate now to a great degree, and very soon there will scarcely be a village of any size but where there will be one or more trustworthy and attested pharmaceutists to dispense prescriptions. But if there be no prescriptions to dispense for these examined and well-trained men? Surely it was not merely to have suitable custodians of poisons that the Pharmacy Act was framed!

If medical men fail to make use of them and employ them in their proper capacity, pharmacy as a science will make little progress, and instead of there being a gradual diminution of prescribing by chemists, there will be more and more, as some use will be made of the knowledge acquired by the disappointed would-be pharmaceutist.

Sometimes perhaps it is wisdom to wait the gradual unfolding of events, and not hasten by pointed action their development. We, in our connection with medical men, have waited long for the time that would bring us into better business relationship. Now, I think it is well that we cease to wait in mute expectation, and that we should put into circulation our opinions, and use all our influence to hasten the desired time when doctors shall not dispense, or chemists prescribe.

It is very desirable, either by means of the Pharmaceutical Society, which ought to take the lead in all good movements to advance our interest, or by any other suitable means, that the medical profession be fully informed on this question. It is just as important to them as to us. Through the agency of the local chemists' associations springing up so plentifully, the link of communication may be made, and the apparent cool indifference on the part of the profession be eradicated, and pharmacy and physic be made to fraternize. Can we not here in Manchester take our share in developing this new era? I believe that we can if we only maintain the vigour of our new but somewhat noted Association, and add to its strength by working zealously and unitedly on its behalf.

If I am not trespassing too long upon your patience, I will offer a few brief remarks upon domestic medicine. I am quite aware that amateur home physicking is viewed by a section of the medical profession with a very deprecatory, if not a jealous eye, and there is little doubt, like all good things, as even our very virtues are, the practice is often subject to very grave abuse. There is no fear that the British pharmaceutist will ever wear the bonds of his Continental brother, and that we shall be subject to the combined medical and governmental restraints that he endures. Still it may be as well, if only for mental exercise, to span the right we enjoy in selling medicines for home use. It is a considerable branch or part of our business, and a source of profit to us, and neither the public nor the chemist will ever consent to forego such a valued privilege. By means of popular treatises on medicine, some of which are written by medical men, and by the greater diffusion of general scientific knowledge, the public are much better acquainted with the use of drugs than formerly. I am persuaded that much good is effected by the timely use of home remedies. It has frequently struck me of late how firmly the two sheet-anchors of modern medicine, viz. quinine and iron, are already fixed on the popular list, and how frequently the poor and least-informed reap the benefit of their use.

The medical purists, or the medical men, who would limit the use of medicines entirely to those prescribed by themselves, can I am sure be only the exceptional few, and perhaps it was unnecessary to have mentioned their existence to-day.

In conclusion, I would ask this question. How is British pharmacy to be raised from the comparatively low status it at present occupies to the true position it ought to occupy, viz., to be the trusty scientific helpmate of the physician? The answer to this question now depends alone—as the requisite training required by law will be secured—upon the right understanding that may be come to between the medical man and the pharmaceutist. Each must be content to give up certain territory which altered circumstances plainly prove should be relinquished, and new treaties of amity and friendship must be made between them.

I feel that I have far from exhausted my subject, but I trust, gentlemen, the plain and very imperfect treatment I have given it, may be of some slight use in improving our relationship with the medical profession.

In the discussion which followed—

Mr. **Bostock** (Ashton) remarked that every medical man in his town dispensed his own medicines.

Mr. **Blain** (Bolton) said that they justified themselves by saying that their fees alone were insufficient remuneration.

Mr. J. T. **Slugg** condemned the growing custom amongst medical men of prescribing in English a few pennyworth of drugs, which often gave the chemist much trouble in verbal directions to the patient, and were unremunerative.

Mr. F. F. **Benger** remarked, that though it was most desirable that chemists should have *all* the dispensing, that, it appeared, would only amount in Manchester to about ten prescriptions per day for each, and the majority would be still compelled to depend on other sources of income. In those Continental countries where dispensing was the main support of the pharmaceutist, the number allowed to practise as such was limited, and bore a definite ratio to the population.

Mr. L. **Siebold** said Hamburg, with a population of 200,000, had about thirty chemists. Berlin, with a population of 600,000, between forty and fifty; but these businesses were of great value. He thought Government, having demanded a scientific qualification for the chemist, should use some influence to obtain for him his proper work.

Mr. **Halliday**, and other gentlemen, thought the Association might use its influence with medical men to procure a clearer division between prescribing and dispensing.

The **Chairman** spoke at some length on the difficult position in which unqualified assistants had been placed by the passing of the Pharmacy Act, and the little inducement which was really held out to them to take the next step. He expressed a hope that the Council of the Pharmaceutical Society would take the subject into its serious consideration, and make some effort to secure for those from whom they demand such high qualifications the work for which they will be prepared.

A very hearty vote of thanks was passed to Mr. Hampson for his paper.

The next monthly meeting will be held on Friday evening, January 7th. Mr. L. Siebold will read a paper "On the Atomic Theory and Modern Systems of Nomenclature."

Coffee at seven P.M.

NOTTINGHAM AND NOTTINGHAMSHIRE CHEMISTS' ASSOCIATION.

The second meeting of the Session was held at the Exchange, on Friday evening, November 19th. The **President** in the chair.

Mr. **Fitzhugh** read an interesting paper, "Hints on Dispensing."

The third meeting was held at the Exchange, on December 10th, when Mr. **Mayfield** read a paper on "French Pharmacy."

The **President** informed the members that the section which had been formed some time ago by the associates was progressing in a very satisfactory manner, and the Council had decided to offer prizes for the most proficient in Pharmaceutical Chemistry and Materia Medica. It was very encouraging to the Council to find that the associates availed themselves of the advantages thus afforded by the Association.

PLYMOUTH, DEVONPORT, AND STONEHOUSE SOCIETY OF CHEMISTS AND DRUGGISTS.

The first meeting of the present session was held on Wednesday evening, the 15th of December, at the Athenæum, Plymouth; Mr. S. B. **Turney**, Vice-President, in the chair.

The President, Mr. J. C. **Radford**, delivered an interesting address, in which he alluded to the responsible position now occupied by chemists and druggists, and the importance of their availing themselves of all possible means, through local association and otherwise, for raising their qualifications, and efficiently fulfilling the duties that devolved upon them.

At the end of the meeting it was announced that the next paper would be read, on the 17th of January, by Dr. **Browning**, "On Some Points in the Therapeutics of the present Day."

SHEFFIELD PHARMACEUTICAL AND CHEMICAL ASSOCIATION.

On Wednesday evening, December 8th, the second monthly lecture of the winter session was delivered to the members of this Association by **Ed. Birks**, Esq., Lecturer on Botany to the Sheffield School of Medicine. Subject, "How to Study Botany."

The President of the Association, Mr. **Hill**, in the chair.

The lecturer gave a careful exposition of the leading principles of structural, physiological, and systematic botany, illustrating the subject, as far as possible, by living plants.

It may be observed, that this was the concluding lecture of a course of twenty-five, which Mr. Birks has delivered to the Associates, his class having comprised nearly thirty members.

He spoke highly of the manner in which his lectures had been attended. He also took occasion to impress on students in botany the necessity of making their studies as practical as their opportunities would permit, the science being so essentially one of observation.

A cordial vote of thanks to the lecturer, moved by Mr. **Sharpe** and seconded by Mr. **Ibbitt**, was unanimously passed.

SUNDERLAND CHEMISTS' ASSOCIATION.

The third meeting for the present Session of the above Society was held in the Athenæum, on Monday, December 6th. The lecturer for the evening was Mr. J. Harrison, who, in a lucid and exhaustive address, particularly addressed to the students, explained the leading principles of elementary chemistry.

It was also intimated by the **Secretary** that the Committee had made arrangements with a competent Professor to give a series of twenty lessons in chemistry, if twenty pupils would agree to attend, and the Society were prepared to defray all expenses beyond their five shillings subscriptions as associates.

The meeting terminated with votes of thanks being passed to the lecturer and chairman (Mr. H. Thompson).

The Annual Dinner of the Sunderland Chemists' Association was held at the Queen's Hotel, on Wednesday evening, December 15th. The **Mayor** (President of the Association) occupied the chair, and Mr. **Harrison Thompson** the vice-chair.

About twenty-five gentlemen sat down to dinner; after the usual loyal and patriotic toasts were proposed and responded to—

The **Mayor** proposed the toast of the evening, "Success to the Sunderland Chemists' Association." It had long been his desire to see a movement of this character initiated. They ought to strive to elevate their position as a trade, for what elevated them as a body elevated them individually. He had made three attempts to get a society underway, but they were like ropes of sand, and as soon as they were rubbed together they fell to pieces. He hoped that would not be so in this instance. They wanted a suitable room, and they ought to put their hands in their pockets and provide a suitable laboratory. They should show the public that they were men of intelligence, and that they were masters of their position in life; and they ought to lay down a code of regulations to get back what they had spent in the labour and toil needful to reach their present position. In the days when he first went to business as a surgeon, they could commence where they liked, and how they liked; but now the Legislature had put a stop to that, they had now to labour hard to reach a certain standard and pass an examination, which showed whether a man was intelligent enough to meet any of the requirements that might come before a practical chemist. His friend Mr. Nicholson had had to spend a great deal of time and trouble in gaining his present position, and why was that? because he had come in at a later day than he (the Mayor). His Worship then alluded to the present practice of surgeons in making up their medicine, and he hoped the day was not far distant when the practice of medicine and dispensing would become two distinct branches of business, when the physician would only have to visit the patient, and the chemist to make up the medicine. The Mayor, after describing the mode of procedure when he went to business, said that physicians ought not to be in that position. He was quite willing to pay his full share of the expenses of fitting up a laboratory, and would like to see this become a model Association of the practical chemists of the country. The Association had his best wishes, and he was quite willing to help it all he could.

The **VICE-CHAIRMAN** responded, and agreed with all the Mayor had said.

Mr. **NICHOLSON** also replied, and said it was twelve months since the Association commenced, and it had answered its purpose. Considering the apathy exhibited by many of the principal members of the profession, they had met with a very fair measure of success. They numbered about forty members, and had provided every facility for the young men acquiring the needful information, which he hoped the assistants would take advantage of. He complained of the apathy of the older members of the profession, with the exception of one or two, but hoped that they would soon become members.

The **VICE-CHAIRMAN** proposed the health of the Mayor. Their President had always exhibited a kind and generous spirit, a noble, persevering disposition, rare business qualifications, and high intellectual abilities.

The toast was drunk with cheers.

The **MAYOR**, who was enthusiastically received on rising to respond, thanked them most cordially for the manner in which they had drunk his health. He was desirous of making himself useful amongst them. He was sorry that many of their friends were not members of their Association, but he hoped the day was not far distant when they would come within their pale.

Mr. **SANDERSON** proposed "The Council," coupled with the names of Messrs. Sharp and Bird.

Mr. **BIRD** responded, and said the Council had had many difficulties to contend with, and sometimes they were doubtful whether they would be able to carry the Society on.

Mr. **SHARP** also replied, and said they were determined to persevere, and he looked hopefully to the future.

Mr. **NASBET** said he had much pleasure in proposing the health of their able and obliging Secretary, Mr. Nicholson.

Mr. **NICHOLSON** responded.

Several other toasts concluded a very pleasant evening.

ORIGINAL AND EXTRACTED ARTICLES.

THE CONSTITUTION OF MATTER.

BY WILLIAM A. TILDEN, B.SC. LOND., F.C.S.,

DEMONSTRATOR OF PRACTICAL CHEMISTRY TO THE PHARMACEUTICAL SOCIETY.

Since the human race first came into existence, men have been more or less occupied with the study of natural philosophy; pursuing it either in the character of professed philosophers, or more usually in the manner of simple wondering observers, like the shepherds of ancient story. Whilst contemplating natural phenomena,—the progress of the seasons, the propagation and growth of herbs and animals, or the properties of earths and metals,—the inclination, apparently instinctive, has ever been to look for something behind the mask of nature; to endeavour, in other words, to find reasons for the existence of things as they are; to seek for other phenomena of a simpler and yet more general nature, which are considered to be what are usually denominated the "causes."

To what extent this endeavour has been successful it is difficult to ascertain, much more to express. According to all probability, in this search after causes, we pursue a will-o'-the-wisp, which possesses no real existence;—a difficulty, indeed, presenting itself at the outset, it having even been found impracticable to explain or define accurately what is meant by the term "cause." The philosophers who have through ages applied themselves to the study of effects and causes, seem to have neglected this fundamental inquiry. In connection with such a study, it would be worth consideration whether the entire universe may not be the great proximate and ultimate cause of itself; every fraction of it exercising such an influence upon every other fraction, and, upon the whole, as to be indispensable to the existence and integrity of the natural order of things. However, this may be, the chemists and physicists, even before the departments of science which they respectively practise assumed independent existence, have ever been looking, like the rest of mankind, for what they suppose to be the causes of the phenomena which they specially study. As they occupy themselves with matter and its associated qualities, it has arisen that they have devoted all available ingenuity to the explanation of the sensible properties of matter by speculations as to its ultimate and final constitution. The oldest of the theories founded on such speculations is that which has held its ground the longest; not altogether because it is perfect and unassailable, but chiefly, as I shall endeavour to show, from its possessing this recommendation, that it makes use of things which we can see and touch, in order to represent and symbolize things which cannot be thus tried by the test of the senses.

The mind constantly endeavours to account for unfamiliar phenomena, by drawing a parallel between them and others which are more perfectly understood. According to the view referred to, all kinds of matter are imagined as composed of "massy, hard, impenetrable, moveable particles, of such sizes and figures as best conduced to the end for which they were formed." This atomic theory, in its physical phase, was known, literally, ages ago; it was a subject which occupied the discussions of the Greek, and even the Hindoo philosophers; it is referred to by Newton in the often-quoted passage in his 'Opticks;' but it was reserved to Dalton, at the beginning of the present century, to revive the problem and to perceive how the idea of atoms or finite particles might be applied to the explication of the phenomena of chemical combination. Notwithstanding, however, the great credit due and awarded to Dalton for his acuteness, it was only by the discoveries of observers subsequent to him that the hypothesis was consolidated into a theory of stability. The only experimental data possessed by Dalton were the facts that the instances then known of chemical combination exhibited the definite character, which has since been traced out in thousands and tens of thousands of cases. They were limited to such combinations as the oxides of carbon, nitrogen, sulphur, and those of a few of the metals, and were based upon analyses which, although pretty good considering the state of chemical knowledge at the time, were, nevertheless, extremely inaccurate. The data for the law of multiple proportions were in the hands of several chemists before Dalton's time, particularly Proust; the law of reciprocal proportions was also partially discovered, but never enunciated, in the last century by Richter; we cannot therefore help admiring the clear-seeing sagacity, as well as the boldness of Dalton, in giving to the world an explanation which so many had failed before him to perceive. It must, however, be confessed that the conclusions of Dalton's own mind were maintained by him somewhat dogmatically, when we consider what is really the truth, that his theory does not follow as a logical necessity from the facts known to him.

We have learnt from observation, and a long series of thousands of experiments, that, in nearly all cases of chemical combination, the compounds formed consist of definite and invariable proportions by weight of the constituents employed. This is the leading fact which cannot be disputed. A study of its different features has led to three great general statements, known as the *law of definite proportions; the law of reciprocal proportions;* and *the law of multiple proportions.*

The first of these is simply an enunciation of the rule just stated: "Thus, water, which consists of one part by weight of hydrogen united to eight parts of oxygen, cannot be formed by the same elements in any other than these proportions. You can neither add to nor subtract from the normal ratio of the elements without entirely altering the nature of the compound."

It must be stated, however, that all the best and most careful experiments have been made only upon the simplest compounds, such as metallic salts. It yet remains to be proved whether there are not numerous instances of combination occurring in indefinite proportions. There seem to be instances of such combination when the attraction between the uniting elements is of a feeble character.

The second law quoted asserts that when chlorine, for example, unites with oxygen and with carbon, the proportions of oxygen and carbon in the compounds so formed are those in which they will themselves unite together, or, as the law of multiple proportions tells us, are simple multiples or fractions of those proportions. Upon these three "laws," which, be it observed, are merely general formulæ expressing what had been observed in a number of individual instances, Dalton based his atomic theory, explaining the combination of masses of matter in invariable proportions by the hypothesis of their being constructed of particles of definite size and weight and indivisible. As before observed, this cannot be *directly* inferred. "All which observation teaches us is, that if there be such particles they are smaller than the smallest observable quantities." At the present day, however, we may safely say that there are few, if any, chemists who believe as implicitly in the atoms of Dalton as he did himself. Dalton seems to have been utterly uncompromising in his notions on this matter.

He even explains such phenomena as "the opacity of metals and their lustre" by the hypothesis that "a great quantity of solid matter and a high condensation of heat are likely to obstruct the passage of light, and to reflect it." The really valuable portion of Dalton's work was the discovery of the laws of multiple and reciprocal proportion.

The atomic theory is now received as the basis of a most valuable method of expressing, in a manner intelligible to the mind, a vast body of facts, and giving the whole a systematic form. "The real experimental import of the equivalent numbers is the expression of the proportional and relative weights of bodies in which they produce equivalent effects in chemical combinations, and these effects *we represent to our minds and render intelligible* by ascribing them to indivisible particles or 'atoms' which occupy a certain space, and possess a certain form or shape."* So that the idea is employed simply as a metaphor. When we begin to inquire what these atoms are which are so freely handled and discussed, what is their nature, are they really indivisible ultimate particles? we are led away into another region into which chemistry can follow with but halting steps, if at all.

The President of the Chemical Society has recently been giving an elaborate defence of the atomic theory; it cannot but be surmised that there exists at the present time more than a small amount of disaffection from the theory, or such a defence could not have been called for.

It will be useful to recall the principal properties of matter, by the study of which the idea of atoms has been gradually established in the minds of chemists. We have seen that Dalton's belief in the existence of indivisible particles was founded solely upon a knowledge of the laws of definite chemical combination by weight. The results of analyses before Dalton's time were represented in numbers which expressed the parts of each constituent in 100 of the compound. For example, in red oxide of copper there are in 100 parts proportions as follows:—

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* Liebig's Letters, p. 103.

Copper	88·8
Oxygen	11·2
	100·0

In black oxide of copper:—

Copper	79·87
Oxygen	20·13
	100·00

In carbonic oxide:—

Carbon	42·85
Oxygen	57·14
	100·00

In carbonic acid gas:—

Carbon	27·27
Oxygen	72·72
	100·00

Dalton discovered reciprocal and multiple proportions by stripping from them the disguise in which this mode of representing composition enveloped them. For by taking some one of the elements in a compound as unity, and ascertaining by calculation the proportions which the others bear to it, it is easy to show that these proportions are simple multiples one of the other.

In the instance of the two oxides of carbon, the composition of which has just been stated, if we calculate the ratio of the oxygen to the carbon in both of them, we find the proportion in the second double that in the first. Thus taking the carbon as unity:—

Carbon. Oxygen. Carbon. Oxygen.
42·85 : 57·14 :: 1 : 1·33
And 27·27 : 72·72 :: 1 : 2·66

Then plainly—

1·33 : 2·66 :: 1 : 2

In other words, the proportion of oxygen in carbonic acid gas is double that contained in carbonic oxide. It must not be forgotten that there is another way of expressing the same fact, for by taking the oxygen as unity, instead of the carbon, we get the following proportions:—

Oxygen. Carbon.
57·14 : 42·85 :: 1 : ·750
72·72 : 27·27 :: 1 : ·375

Then

·750 : ·375 :: 2 : 1

Or we may say carbonic acid contains half as much carbon as carbonic oxide. Similarly it will be found that the ratio of the oxygen in the oxides of nitrogen, of sulphur, and of many of the metals, will be as 1, 2, 3, etc., to 1 of the other constituent.

Then came Gay-Lussac's discovery of the laws of chemical combination of gases by volume or measure. The observation made by that illustrious chemist that gases combine in volume, which are either equal or are even multiples one of the other, was a discovery equally important with that of combination by weight.

This simplicity arises from the peculiar circumstance that equal measures of gaseous elements consist of weights (their specific gravities) which stand to each other in the same ratio as their combining quantities.

Thus hydrogen combines with chlorine in equal measures to form hydrochloric acid, because, to take concrete quantities, 11 litres of hydrogen weigh 1 gramme, and 11 litres of chlorine weigh 35½ grammes; and these are the proportions in which these elements combine by weight.

On stating it conversely, weights of solid or liquid elements proportional to their combining weights assume the same volume when converted into vapour and measured at the same temperature and under the same amount of pressure. Thus 127 grammes of iodine, when heated so as to change it into a gas, occupy the same space that 1 gramme of hydrogen fills.

Another and a different kind of phenomenon is exhibited in the deportment of different bodies under the influence of heat. When different substances are made to receive heat at a uniform rate from one and the same source, it is found that their temperatures rise with very different degrees of rapidity. Or the experiment may be made by taking equal weights of the same substances and allowing them to lose a certain number of degrees of temperature, carefully noting the time occupied by both in undergoing this change. That body which changes in temperature most rapidly, whether to become hotter or colder, is said to have the smallest "specific heat." From experiments of this kind upon the different elements a series of numbers has been obtained,* which represent their respective specific heats, and the chief peculiarity of which is that when multiplied by the combining weights, they give nearly the same number in each instance; this is equivalent to saying that the capacity for heat of each element is inversely as its combining weight.

It has been said that elements, when examined in the state of perfect gas, are found to contain, in equal volumes, ponderable quantities which are identical with those of their combining quantities. This observation applies equally to compound bodies.

The formula—

HCl	represents	36½ parts of hydrochloric acid.
H_2O	„	18 parts of water.
H_2S	„	34 parts of sulphuretted hydrogen.
H_4C	„	16 parts of marsh gas.
C_2H_6O	„	46 parts of alcohol.
$C_4H_{10}O$	„	74 parts of ether.

All these, measured at such temperatures that they are in the gaseous condition, fill the same space, and they are the quantities which represent the "units of chemical action" in the instances given. These are the proportions in which it is easy to prove by other methods, these compounds enter into combinations, or are produced by chemical decompositions. They represent what are known as the molecules of these compounds.

"There are, also, crystalline compounds, which chemistry has found to be closely analogous, which occupy, in the crystalline state, equal or nearly equal volumes.

"Among other physical properties which confirm the truth of the atomic views of molecular constitution are boiling-points. Whenever truly analogous elements are comparable in respect to boiling-points, it is found that those composed of heavier atoms boil at higher temperatures than those composed of lighter atoms. A comparison of the successive terms of the series—chlorine, bromine, and iodine—illustrates this difference very strikingly. So, also, a comparison of the several terms of the series,—oxygen, sulphur, selenium, and tellurium, and, not less so, the elements, nitrogen, phosphorus, arsenic, antimony, and bismuth.

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* See a paper by the author in the Pharm. Journ. N. S. Vol. IX. p. 532.

"Now, whenever volatile organic compounds belonging to a homologous series are compared, it is found that, of two such compounds, the one having the higher molecular weight has also the higher boiling-point. The glycols present, however, an exception to this general observation.

"The melting-points of homologous organic compounds also show differences running parallel in like manner to their differences of molecular weight.

"The relative velocities of motion of particles, as shown by the processes of diffusion, afford another confirmation of the general truth of the molecular weights; for, on the one hand, it is known that heavy particles diffuse more slowly than light particles; on the other hand, a comparison of the relative velocities of movement of molecules of relative weights, previously determined upon chemical evidence, shows that the heavier molecule of chemistry is also the heavier molecule in diffusion.

"Among chemical evidences of atoms the discovery of the distinction between direct and indirect combination is worth consideration, more especially as it is independent of the quantitative comparisons which have hitherto guided us. Many elements which have never been obtained directly combined, are bound together by a third; thus we have no direct compound of hydrogen and potassium, but in potassic hydrate an atom of hydrogen is united with oxygen, and an atom of potassium is united with this same oxygen, H O K. Hydrogen in this hydrate is indirectly united with potassium, an atom of oxygen being the connecting link between them.

"What concerns us in these reactions is to see the evidence which they afford that the binding element is an atom. The very fact itself amounts to that. In potassic hydrate, oxygen is combined with hydrogen; it is also combined with potassium, but the hydrogen cannot pass off, even at a red heat, in combination with its half of the oxygen. The two halves are inseparable, and when I say that in the molecule of potassic hydrate there is a single atom of oxygen, I merely state that fact."*

(To be continued.)

THE PREPARATION OF SOAP FOR SOAP LINIMENT.

BY C. H. WOOD, F.C.S.

The process given in the British Pharmacopœia for the preparation of linimentum saponis is, I believe, founded upon the results of some experiments communicated to the Society by Mr. Deane in 1859. Mr. Deane found that when good Castile soap is macerated in the spirit at a temperature below 70° F., the oleate of soda dissolves, while the margarate of soda remains to a great extent insoluble, and the resulting solution does not lose its limpidity by the application of moderate cold. If, on the contrary, the whole of the soap be dissolved by digestion with heat, the liniment gelatinizes on a reduction of temperature. From this it follows that good soap liniment should consist of a solution of oleate of soda, as free as possible from the alkaline margarate or stearate. Hence Castile soap, which is prepared from olive oil, is the only commercial soap adapted to the purpose, the other soaps being made from solid fats, and containing a much smaller proportion of the oleate. Mr. Squire mentions in his book an experiment indicating that white Castile soap is soluble to the extent of 80 per cent. in cold rectified spirit. This is the soap described in the Pharmacopœia, and I have no doubt that if the process there given for preparing the liniment be carefully followed, it yields a sufficiently satisfactory result. Nevertheless, if a soap could be obtained containing a still larger proportion of the soluble constituent, it would doubtless be preferred. For some time past I have prepared such a soap for myself by a very ready method, and have found it to possess considerable advantages.

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* Williamson on the Atomic Theory, Journ. Chem. Soc., ser. 2, vol. vii. p. 328.

To produce a soap as rich as possible in oleate of soda, an oil should be selected containing the largest proportion of olein and the smallest quantity of solidifiable constituents. Almond oil is therefore better suited for the purpose than olive oil, and it is from this material that I obtain my product.

The saponification of oil as commonly performed is a protracted and somewhat tedious process to conduct on the small scale. For this reason, probably, chemists are not in the habit of preparing their own soap. But if, instead of boiling the oil and alkali together until they unite, the oil be first treated in the cold with $\frac{1}{20}$th of its weight of strong sulphuric acid and allowed to remain for twenty-four hours, it is rendered so soluble in liq. sodæ that its conversion into soap becomes a matter of the utmost facility. Adopting this plan, I have found the process to be one of the easiest of pharmaceutical operations. The acid mixes freely with the oil, forming a blackish-coloured fluid. On the addition of the soda this colour entirely disappears, and the soap obtained is quite white. The following is the method of procedure I have found to be the most convenient:—

Almond oil	1¼ pound
Sulphuric acid	1 ounce (weight)
Liq. sodæ	10 pints.

Add the acid to the oil, stirring the mixture. Allow this to remain for twenty-four hours. Then pour it into the liq. sodæ contained in a clean iron vessel, and apply heat. Very shortly after it boils, the liquid becomes perfectly bright and transparent; the fire is then removed, and the whole allowed to become perfectly cold. The soap is then found as a coherent cake floating on the top of the liquor. It is laid on a calico filter, and left to drain for several hours; or, if it is desired to obtain it perfectly free from all traces of caustic alkali, it may be redissolved in 10 pints of boiling water, and a strong solution of 5 oz. of common salt added. As the mixture cools, the soap rises to the surface; and when quite cold, again forms a firm layer, resting on the aqueous liquid. No loss of weight is thus incurred. The soap is placed on calico to drain, after which it may be submitted to moderate pressure, or melted in a tared dish, and reduced to a uniform weight of 2½ pounds. When thoroughly cold, it forms a firm white soap, which may be cut into pieces, and kept for use in a covered pot.

In the preparation of linimentum saponis, this soap is macerated in the spirit in the cold. It very quickly dissolves, especially if the mixture be agitated. From 4 to 5 per cent. of the weight of the soap remains insoluble, as a flocculent deposit. After this is filtered out, a pale liniment is obtained, which may be kept at 32° F. for any length of time without thickening or depositing. The Pharmacopœia does not direct the soap to be dried before use. Fresh soap usually contains from 30 to 40 per cent. of water, and I think it is best to employ it in this moist condition.

Soap may be quite as readily made from olive oil by the foregoing method, but I think the use of almond oil will be found to present several important advantages. Although the latter is the dearer material, it does not sensibly affect the cost of the liniment, because the soap is to a greater extent soluble; consequently, the quantity of product is increased, and the proportion of spirit retained in the undissolved matter is saved.

CHLORODYNE.

BY EDWARD SMITH, F.C.S.

Judging from the papers that have recently appeared in the 'Pharmaceutical Journal,' it would seem that there still exist great doubts as to the actual composition of this popular remedy.

There have been published two formulæ for the preparation of chlorodyne,—one known as Dr. Ogden's, and quoted by Royle in his 'Materia Medica,' the other to be found in Squire's 'Companion,' and two more distinct and divergent formulæ can hardly be conceived. It may be worth while, perhaps, to put them side by side.

Dr. Ogden's (Royle).	Squire's (Companion).
℞ Æther. Chlor. ʒj	℞ Chloroform ℥iv
Chloroform ʒvj	Æther ℥j
Tinct. Capsici ʒss	Sp. V. Rect. ℥iv
Ol. Menth. Pip. gtt. ij	Theriacæ ℥iv
Morph. Mur. gr. viij	Ext. Glycyrrh. ℥iiss
Acid. Perchlor. gtt. xx	Morph. Mur. gr. viij
Tinct. Cannab. Ind. ʒj	Ol. Menth. Pip. ♏xvj
Theriacæ ʒj	Syrupi ℥xviiss
Acid. Hydrocy. Scheele ♏xij.	Acid. Hydrocy. dil. ℥ij.

Dr. Ogden, I believe, published his formula as resulting from analysis, and Squire says his formula has been represented to him as the true one; it is plain, however, either that Dr. Ogden's analysis is worthless, or that Squire's information is derived from unreliable sources. Dr. Ogden gives the amount of morphia as eight grains in about nine drachms, Squire gives it as eight grains in about thirty-five ounces!! The proportion of chloroform, too, differs enormously. In the first it amounts to about two-thirds, in the latter to about one-eighth. Dr. Ogden says nothing of ext. glycyrrh., syrup, sp. v. rect., or ether, and on the other hand, Squire omits all mention of acid. perchlor., tinct. cannabis, or capsicum.

I have not met with the particulars of Dr. Ogden's so-called analysis, and in truth, I am very much inclined to doubt if any *chemical* analysis has been attempted, as the formula bears the impress of improbability on the face of it, *i. e.*, supposing that Collis Browne's chlorodyne be intended; for instance, the dose of the latter as marked on the label is from ten to thirty drops, now this would contain, if Dr. Ogden is right, from seven to twenty drops of chloroform, a dose which very few practitioners would care to venture upon, particularly as it is to be repeated at certain intervals, and in combination with from a sixth to half a grain of morphia per dose. I rather suspect that Dr. Ogden's analysis has had more of a physical character attached to it, the organs of taste and smell having perhaps greatly assisted the supplementary chemical tests.

The dose of chloroform in Squire's is not unreasonable; but that of morphia, viz. the 1-200th to the 1-70th of a grain, is palpably absurd, and so homœopathic that it might practically be omitted from the compound. The only conclusion fairly deducible from a comparison of the two formulæ is, that neither of them can be said to represent the well-known Browne's chlorodyne.

The results of an examination I have recently made of the genuine compound may not be uninteresting to pharmacists.

The positive detection and isolation of the alkaloids in complex organic mixtures is not always a very easy task, more especially when they exist in small proportions. I started with the intention of simply satisfying myself of the presence or absence of morphia; however, the examination gradually developed itself, and ultimately I managed to make out with tolerable precision what I believe to be the actual composition of this preparation.

Genuine chlorodyne has a sp. gr. of 1·216, and reddens blue litmus paper. Distilled over a water-bath, it yields an opaque distillate, evidently a mixture of two or more fluids; on the addition of an equal volume of water, the distillate separates into three distinct layers. The upper one has an ethereal pepperminty odour and taste, and is in fact oil of peppermint dissolved in ether. The ether may be recognized by the ready inflammability of its vapour.

The middle layer, separated by a pipette and gently heated with a few drops of hydrochloric acid and potassium chromate, gradually assumes a green coloration, owing to the reduction of the chromate, and indicating the presence of alcohol—a tincture probably. The odour of hydrocyanic acid is given off during the heating. This layer also gives a precipitate with silver nitrate, insoluble in nitric acid and sparingly soluble in ammonia, revealing hydrocyanic acid.[*]

The lowest layer, heated gently with caustic potash, yields with silver nitrate a precipitate insoluble in nitric acid, and which blackens by the further application of heat, owing to the reduction of the silver formate, indicating the presence of chloroform.

The residue in the retort, consisting of a dark, semifluid paste, dissolves in water, and has a very pungent, peppery taste of capsicum. This aqueous solution gives a precipitate with alcohol, basic plumbic acetate, and ammonium oxalate, revealing the presence of gum, and also gives the usual glucose reaction with the potassio-cupric tartrate. The non-volatile alkaloids would of course be found in the residue in the retort after distillation, but the colouring matter adheres to its solution in water, etc., with such pertinacity as to render the usual tests very unreliable, and therefore a fresh sample of the original compound is required, to satisfactorily determine their presence.

The following is the plan I adopted to isolate the alkaloids:—

Digest the chlorodyne with twice its volume of alcohol, containing a few drops of acetic acid at a warm temperature, say 50° to 60° C. for four or five hours, occasionally shaking the mixture. The whole of the gum and much of the colouring matter are thus precipitated. After filtration, the alcoholic solution is gently evaporated until it thickens, being careful not to push the evaporation too far, as the glucose in the solution very soon blackens. To this semi-liquid extract is added water, and the whole gently heated with a solution of potassium bicarbonate, containing a little caustic potash, and set aside to deposit.

This precipitate of alkaloids is separated by filtration and digested with ether, until nothing more is dissolved. All the alkaloids likely to be present in chlorodyne, such as atropia, are soluble in ether, with the exception of morphia, which remains undissolved. The residue, insoluble in ether, is treated with acetic ether, in which it speedily dissolves. A small portion of the ether solution undergoes no change on the addition of potassic iodomercuride solution, but by evaporation yields a very minute residue, which has an intensely pungent and burning taste, being evidently impure capsicine. All my attempts to obtain evidence of the presence of atropia failed.

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[*] In the preliminary examination of complex organic mixtures for hydrocyanic acid, Schönbein's guaiaco-cupric test promises to be useful. Thus, the presence of hydrocyanic acid in chlorodyne may be determined in a few seconds by this test. It must be borne in mind that *free* nitric acid and chlorine give the same reaction, but not their compounds, neither do acetic, hydrochloric, sulphuric, or phosphoric acids.

The acetic ether solution gives a copious precipitate on the addition of potassic iodomercuride solution, and by evaporation yields microscopic crystals, which, on the addition of a few drops of acidulated water, give the usual morphia reactions with nitric acid and neutral ferric chloride, thus satisfactorily demonstrating the presence of morphia.

From the above it will be seen that chlorodyne consists essentially of chloroform, morphia, ether, hydrocyanic acid, and capsicum, with the addition of gum and treacle as vehicles, and oil of peppermint as a flavouring ingredient. Tincture of Indian hemp does not appear to be present, as the alcoholic extract is soluble in water.

The quantitative estimation of the several component parts of chlorodyne is in some respects a very tedious process, but it may be roughly made as follows:—The chloroform by distilling a known quantity, and adding to the distillate a given volume of water,—the chloroform is thus isolated, and, if a graduated measure be used, its volume at once read off; at the same time the amount of spirit, plus hydrocyanic acid, may be noted, and the oil of peppermint, plus ether, which floats on the surface. If the hydrocyanic acid be now estimated by precipitating with a known weight of silver nitrate, the amount of spirit is a simple matter of calculation.

The gum readily separates on the addition of alcohol, and may be washed, dried, and weighed, or a known volume of water added to the precipitate, in which it speedily dissolves, the increase in volume will approximately give the amount of gum. The capsicum does not exist in sufficient quantity to admit of measurement.

The morphia may be estimated by evaporating the acetic ether solution to dryness, dissolving in water slightly acidulated with acetic acid, and cautiously neutralizing with caustic potash (being careful to avoid excess, which redissolves the precipitated morphia), filtering and weighing. It is necessary to operate upon at least four ounces of chlorodyne to arrive at anything like satisfactory results. The potassic iodomercuride solution precipitates morphia from its solutions, but unfortunately the reaction is not sufficiently reliable to employ it as a quantitative test. The amount of treacle may be estimated pretty closely by calculation after all the ingredients have been accounted for.

The composition of chlorodyne, then, I put as follows:—

℞	Chloroformi . . .	f. ʒiv
	Morphiæ Mur. . .	gr. xx
	Æther. Rectif. . .	f. ʒij
	Ol. M. Pip. . . .	♏viij
	Acid. Hydrocy. Dil.	f. ʒiv
	Tinct. Capsici . .	f. ʒvj
	Mist. Acaciæ . . .	f. ℥j
	Theriacæ . . . ad	f. ℥iv.
	Misce.	

This does not give so dark a compound as the original, because the latter contains caramel, but as this has no medicinal or other value, I have omitted it, making up to the required volume with the treacle.

In conclusion, I would suggest to those who care to use this formula, that it be known and prescribed as "liquor chloromorphiæ comp.," which explains sufficiently well its essential constituents, and is a name which cannot be confused with any advertised or quack compounds.

PRACTICAL REMARKS ON THE PREPARATION AND PRESERVATION OF THE SYRUP OF IODIDE OF IRON.

BY MR. J. T. PORTER.

During the last two years I have been making experiments on the preparation and preservation of this syrup. I have tried every process that has appeared in the Pharmaceutical and other journals, with a view of ascertaining if any of them practically superseded the process ordered in the British Pharmacopœia. It may be as well to state at once I never entertained the idea of introducing anything that is not ordered in the Pharmacopœia, such as citric, tartaric, or phosphoric acids.

I only wish to state, in as concise a manner as I can, the mode of manipulating and the precautions experience has induced me to adopt.

In the first place, I select good iron wire, bright and clean, of about the thickness of fine twine, *i. e.* No. 20, preferring wire because it is the purest form of iron; the filings and turnings, even when well washed, contain many impurities, especially sulphur. The wire being cut into suitabe lengths is introduced into an eighty-ounce flask. A large flask is used, because it can be shaken more thoroughly, without the danger of spilling the liquid or losing the iodine vapour, the latter condensing in the upper part of the flask. I then add the water and the iodine, set the flask aside, and, while the action is going on, prepare the syrup. In making the syrup I prefer English refined sugar, and dissolve it without boiling, as I have found that sugar crystallizes out abundantly from a solution that has been boiled; then, having strained the syrup into a weighed jug, I return to the flask; agitate it until the combination is completed, or, as the Pharmacopœia states, till the froth becomes white, which I have always found the best indication. The solution is then filtered into a separate bottle, and poured carefully into the syrup, that it may sink to the bottom, and the weight of the whole is made up with freshly-boiled distilled water. The distilled water is boiled to ensure the absence of carbonic acid or oxygen gases. Now I stir the contents of the jug, so as to mix the syrup and the solution, and finally bottle it off, filling the bottles to the brim, so that when the syrup cools there is as little air in the bottles as possible. The precautions necessary to be taken to keep the syrup are very simple, viz. to well cork the bottles when the syrup has cooled, and to shake them after a few hours, so that the water (which may have condensed in the necks) may be well mixed with the syrup. If this latter precaution be neglected, the consequent layer of water on the surface will soon deepen in colour, and act (as observed by Mr. Gale some time ago) as a starting point for the whole to become coloured.

Syrup made according to this process will keep in diffused light, as on the shop shelf, for more than a year, one sample being dated as far back as September 29th, 1868, that is fourteen months, yet it is as good in colour as when first made.

For pharmacists whose consumption is regular the above process is the best one I know, having made by it large quantities. I have tried many other methods of making syrup of iodide of iron. That by Mr. Hustwick I have tried twice, but have not succeeded even in making a syrup of the right colour.

It has turned brown at the surface where it comes in contact with the vessel in which it was heated. My experience is, that the process in the Pharmacopœia, if it be strictly adhered to, together with ordinary precautions such as I have mentioned, is, after all, the best one, and all that could be wished for.

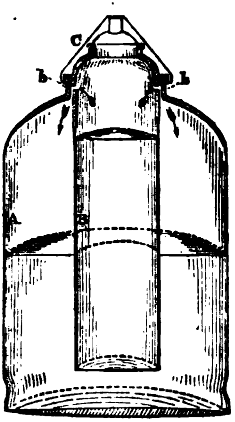
To any chemist whose consumption of this syrup is very irregular, and who may have to keep it for a long time, I would suggest another method of bottling off, viz.: Make the syrup and the solution; weigh them separately, and to the former add the quantity of boiled distilled water necessary to make up the weight of the whole. Mix this well with the simple syrup, and half fill a number of weighed bottles of any desired size. Then, having measured the solution of the iodide, divide it off, and pour the required quantity into each bottle by means of a long funnel reaching to the bottom, and finally make up the weight of each with the simple syrup. The advantage of this method is, that the solution is in a distinct layer at the bottom, which, being protected by the syrup above, will remain without change, for aught I know, for years. When the syrup is wanted, you have simply to well mix the solution by shaking the bottle, and you will have it as when first made. This method is very simple, and, by a little calculation, easily managed. Finally, when the syrup in the opened bottle has become coloured, I have always found, and without failure, that by exposing it to the direct rays of the sun for a few hours it will return to, or rather become lighter than, its original colour. In winter time, however, the sun is not sufficiently powerful. But the syrup may be kept until summer, for, when it gets even quite brown, a day's summer sun will bring it right. Thinking that specimens might be interesting, I have reserved a bottle each time I have had to make the syrup, and marked the date thereon. The specimens are made by both of the above processes, and to all appearance are very good. They will be on the table for inspection at the pharmaceutical meeting for January.

AN APPARATUS FOR MAKING DILUTED NITRO-HYDROCHLORIC ACID.

BY J. T. PORTER.

Having for some time noticed great variation in the strength of samples of diluted nitro-hydrochloric acid made according to the directions of the British Pharmacopœia, I was induced to make some experiments on the subject, feeling confident that some apparatus could be devised which would obviate the difficulty. To obtain this result, in the first instance I put the acid into a bottle sufficiently large to hold the whole when diluted, tied down the stopper, and after twenty-four hours diluted it: yet much gas was lost, and the experiment was accompanied with considerable danger, for on one occasion the Winchester quart burst, owing to the pressure of gas within it. This failure, however, gave rise to another experiment, viz. to have the mixed acid contained in one bottle, and the water necessary for subsequent dilution in another, and to connect the two by a glass tube; the idea being that, as the gases were generated, they would become absorbed by the water, and after twenty-four hours had elapsed, the acid might be diluted without disconnecting the apparatus. This apparatus answered very well in that it did not allow the gases to escape, but it was somewhat complicated in form as well as difficult to fix, since cork could not be used.

Having to make the acid in large quantities, I thus had an opportunity of improving the above contrivances. At length an apparatus was constructed which will probably meet every requirement, ensuring the product always being of the same strength. The acid of the British Pharmacopœia is variable, principally because the result depends much upon the surrounding atmospheric influences, temperature, etc., as well as upon the size of the bottle in which the acid is kept before diluting. My apparatus is very simple in form, and easily managed. It consists of a large bottle (A) with a wide mouth, into which is ground a smaller bottle (B). This latter has two holes (*b b*) drilled in it near the shoulder, corresponding to two grooves in the neck of the large bottle (A), which grooves are so ground as to allow the gases generated in B to pass into A, but not to escape into the air. By turning the inner bottle half round the connection is cut off. C is a clamp to secure the stoppers. In the outer bottle A is placed the water with which the acid is to be diluted; in the inner bottle the mixed acid. The bottle B is then placed in A in such a manner that the holes *b b* and the grooves correspond, and by means of the clamp C the whole is made secure. The strong acid and the water remain thus separated twenty-four hours, the chlorine, chloronitrous, and other gases pass through *b b* into A and become absorbed in the water. During the time the acid is ordered to be kept before diluting, it is advisable to shake the apparatus a little to facilitate the liberation of the gases in B, and the absorption of them in A. The dilution of the acid is effected by simply placing the apparatus on its side, so that the openings *b b* are vertical, when the acid will run from B into A. When part of the acid has thus run out, dilute it by shaking the bottle, then remove the clamp C and carefully loosen the stopper in B, so as to ascertain if there is pressure within. If there should be pressure replace the clamp, and continue the dilution until, on loosening the stopper, the pressure is found to have diminished below that of the atmosphere, or in other words, there is suction from without inwards. The stopper in B should then be removed so as to equalize the pressure within and without the apparatus. If this precaution be neglected, the stopper will be drawn in so tightly that it will be difficult to loosen without breaking the bottle. This great diminution of pressure may be attributed to some oxygen of the air, originally contained in the apparatus, entering into combination with the other gases, and forming with them soluble compounds, and to the decrease in volume that invariably accompanies the dilution of acids. Having finished the operation, pour the contents of B into A, and the latter being fitted with a stopper, may be used as the stock bottle.



The same process may be conducted in a tube and a wide-mouthed bottle; a more simple arrangement, but inconvenient, because of the difficulty of getting the tube in or out without breaking either it or the bottle. I have broken three bottles in attempting to substitute a tube for the inner bottle. In two instances the breakage was caused by the tube falling obliquely from one side of the bottle to the other in the process of dilution, and in the third instance the bottle was broken by the tube dropping to the bottom during insertion. Various forms of apparatus will be on the table at the pharmaceutical meeting for January.

The advantages of a bottle of this kind are evident.

In the first place the product is always the same, which is most important to pharmacists.

Secondly, the gas or gases to which this acid owes its peculiar properties are all contained in the product.

And thirdly, this bottle prevents the loss of acid fumes, which makes a considerable difference in the total acidity. In fact, the acid is stronger, more definite, and therefore superior to that made by the official method.

Diluted nitro-hydrochloric acid, made by the process ordered in the British Pharmacopœia, should have a sp. gr. 1·074; and 352·4 grains, by weight, should require for neutralization 920 grain-measures of the volumetric solution of soda. Practically, however, the product does not answer to these tests, as shown by Mr. Heathfield and Mr. Tilden. The former gentleman, in a paper read at the Pharmaceutical Conference, held at Dundee, stated that he found the acid to have a sp. gr. 1·066, and neutralizing power equal to 840 grain-measures of volumetric solution of soda. Mr. Tilden's experiments detailed in the 'Pharmaceutical Journal' (second series, Vol. X. p. 580), show that 352·4 grains by weight of acid, when made as directed by the British Pharmacopœia (to say nothing of the precautions he used and the care he took to have all the gases and fumes contained in the product) has a saturating power equal to 828 grain-measures of volumetric solution of soda, in no case requiring 920. I have made similar analyses, and have found the mean of eight estimations (*i.e.* four samples, two estimations each) to be sp. gr. 1·065, and the acidity of 352·4 grains by weight equal to 835 grain-measures of volumetric solution of soda. This result nearly corresponds to the estimation of Mr. Heathfield, but is a little above that of Mr. Tilden. From these statements we clearly see that acid diluted by the B.P. process, practically does not answer to the tests given for it in the Pharmacopœia, which test, supposing there to be no diminution in volume, is too much by 20 grain-measures. However, there is a decrease in volume of one in ninety-six, thus increasing the acidity of the product. The analyses of acids made in these bottles are as follow:—

The mean of eight estimations (*i.e.* two for each sample) was sp. gr. 1·0741, and 352·4 grains, by weight, required for neutralization 919 grain-measures volumetric solution of soda. The comparative result in respect to acidity is, that 100 grains by weight of acid, made in these bottles, will neutralize 24 grain-measures more of volumetric solution of soda than the same quantity of acid made by the old process, or, in other words, that 91 grains by weight of the former acid is equal in acidity to 100 grains by weight of the latter. With regard to free chlorine, comparative analyses show that 100 grains by weight of acid, made in these bottles, require 3 grain-measures more of volumetric solution of hyposulphite of sodium, than the same quantity of acid made as the Pharmacopœia directs.

In conclusion, I would express my thanks for being permitted to conduct many of the above experiments in the Laboratory of the Pharmaceutical Society, and for the kind hints of Professor Attfield.

ON EXCIPIENTS FOR PILLS.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Dear Sir,—I venture once more to trespass on your space, in reply to some remarks made by Mr. Savage in the last Journal, on a previous communication of mine; but will first premise that this is not a discussion on the therapeutic value of wax, but only its use as an excipient for pills. In his reply, he most certainly has not "proved the fallacy of my experiments," and I think that I shall shortly be able to show that there is considerable inconsistency between his theory and his practice; and I would also remind him that there is no analogy between the idea of taking turpentine after wax pills, and spirits of wine after gum resinous, or acid after quinine pills, as a very limited amount of Pharmaceutical knowledge will show. To proceed with the experimental part, I have again carefully made up the formulæ given in his letter, using minims instead of drops, and though Mr. Savage was obliged to give them up as a lamentable failure, yet, by judiciously varying the proportions of the excipients, I have been able to produce very good pills, of course rather larger than the last, but still of a reasonable size, and perfectly free from the outrageous defects mentioned by him. In only one case (*c*) did the creasote exude, and that was so very slight as to call for no special notice. I can only account for Mr. Savage's failure by a possible want of practice in this speciality; creasote pills being undoubtedly difficult to manage by those who are unaccustomed to them; it is not unreasonable to suppose that they who frequently dispense such medicines are more likely to succeed than those who have not similar opportunities. I am, therefore, still of opinion that bread, where admissible, is a better vehicle for such pills than wax. It makes, especially with the aid of tragacanth paste, a soft and plastic mass which does not crumble or split up; true, it becomes a little harder after the lapse of a few days, but as these pills are generally ordered in small numbers and taken quickly, it is not of much importance. Supposing that Mr. Savage wishes the pepsine test to be taken as conclusive evidence of the solubility, or otherwise, of those substances submitted to it in the gastric juices, I will now endeavour to prove that his wax pills are indigestible, for a pill of beeswax, digested with 5 grs. pepsine in 2 drms. water at 100° for seven hours remained quite unchanged, while a wax and soap pill, which is a very different thing to wax alone, was completely dissolved by water only at 100°, and the same pills made, when rubbed up with water, a beautiful emulsion. If there was no objection to the use of soap and wax, I might sometimes prefer it to bread, but could not feel justified in using either or both, unless ordered, and certainly not wax alone.

Further, I don't consider the solubility of wax in the stomach proved by the action of purgative pills coated therewith, however thickly, as the moisture and heat without, aided by a plastic mass, often containing an alkali within, would be sure to cause their disintegration; it is probable that a solid pill of wax would be unaffected. In trying "to prove the fallacy of my experiments," Mr. Savage shows a little inconsistency, for he commences his letter by *saying* that "*wax* is the best excipient for creasote pills," but gives, as a pattern formula, one containing *wax and soap*, which I have shown to be a totally distinct thing. Just a word as to the drop. I would advise no one to measure other person's drops by his own; that there is a difference between a drop and a minim I suppose no one denies, in my case the discrepancy nowhere approaches that given by Mr. Savage, and I still think the same end is attained by a drop as a minim for creasote pills, as the trifling difference between the two cannot appreciably affect the value of the remedy, especially as all operators may not be careful to drain out thoroughly their measure, or may not be provided with a minim tube. I must now apologize for the more than intended length of this letter, but if it conveys any useful information, I trust your readers will not consider their time and patience wasted, by your obedient servant,

T. H. Hustwick.

9, West Derby Street, Liverpool.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—I have read with interest the paper delivered before the Conference by Mr. Savage on the subject of excipients for pills, as well as Mr. Hustwick's remarks, and the former gentleman's reply to those remarks. Before the subject is allowed to drop, I should like to place before your readers as a good general excipient, one that I have adopted for many years; but in doing so I wish it to be understood that I do not vaunt its superiority over the excipients recommended by those gentlemen in the special cases they have brought before us, but for general purposes I consider it superior to those usually in vogue, such as mucilage, conserve of roses, bread, etc. It is composed of—

ʒij powdered tragacanth,
ʒvj (by measure) of glycerine.

This is mixed in a mortar and put into a covered pot; at first it is in a semi-fluid state, but in the course of a few hours becomes a firm, tenacious mass; it is then ready to be placed on the dispensing counter for use when required. It will keep well, and but a small quantity is necessary to form a mass, and consequently it does not render the pills too bulky; for instance, 24 grs. quiniæ sulph. require only 10 grs. to form a good mass; ʒj potass. iodid. only 6 grs. easily rolled out. It is also well adapted for calomel, opium, and morphia pills. Since reading Mr. Savage's paper I have tried it with creasote, and find 24 minims creasote, 36 grs. pulv. glycyrrh. decort. with 6 grs. of the excipient, make 12 pills of good consistence and moderate size, the creasote being all absorbed. Another advantage is that pills made with this excipient do not become hard, and at the same time keep their shape. I may as well add that I generally keep another pot of the same excipient at hand, only made in different proportions, viz. ʒij pulv. tragac. to ℥i, by measure, glycerine. This is softer than the other, and a small portion of it added to any refractory mass generally renders it manageable. Yours, etc.,

S. B. TURNEY.

Plymouth, December 17th, 1869.

OX*I*DE *v.* OX*Y*DE; CH*E*MIST *v.* CH*Y*MIST.

BY BOVERTON REDWOOD, F.C.S.

In the last number of the 'Pharmaceutical Journal' appeared, as an extracted article, a statement by Dr. John Harley. which is, I believe, based upon conclusions somewhat too hastily drawn. Dr. Harley, who heads his remarks "The Conversion of the Greek Υ," says that with reference to certain scientific terms derived from the Greek, as they are to be met with in the British Pharmacopœia and elsewhere, we find both error and inconsistency in the conversion of the letter upsilon. "Thus, on the one hand," he continues, "we have ŏx*y*gen and ox*i*de, but, on the other, h*y*drogen and h*y*dride, or h*y*dration."

Now in the latter three of these words, formed, as they are universally admitted to be, from the Greek ὕδωρ (hydrogen from ὕδωρ + the root of γένειν), the letter *y* appears as an equivalent of the upsilon; and, taking it for granted, as Dr. Harley seems to do, that the former words are both derived from ὀξύς (oxygen from ὀξύς + the root of γένειν), it certainly looks like an error to write *oxide* with an *i* and not with a *y*. But, while admitting that the first portion of the word *oxygen* is derived from ὀξύς, are we justified in assuming that, beyond all question, *oxide* owes its origin directly to the same source? True it is that in the Dictionary of the French Academy (1842) the word is spelt *oxyde*, and that in Bescherelle's Dictionnaire National (1857) we find the same orthography, followed by this remark:—"Quelques dictionnaires écrivent avec un *i oxide* et ses dérivés, mais nous croyons que conformément à l'étymologie, il vaut mieux écrire ces mots avec un *y*." But, in Ogilvie's Dictionary, we have *oxide* given as the correct spelling, and ὄξος, in addition to ὀξύς, as the source of the word.

And in the new American edition of Webster's Dictionary the following appears:—"Oxide. [Fr. *oxide*, *oxyde*. The French word was correctly spelt with *i* instead of *y* in the second syllable till about the year 1840, when, in ignorance or forgetfulness of the true history and composition of the term, the orthography was changed to make it represent the υ of the Greek word ὀξύς, from which it was supposed to be directly derived.] This word has been variously written *oxide*, *oxyd*, *oxyde*, and *oxid*. It was introduced into the present system of chemical nomenclature by Guyton de Morveau in 1787, and was by him and his associates of the French Academy spelled *oxide*, the first syllable of Fr. *oxigène* or *oxygène*, being prefixed to the last syllable of *acide*, to denote a substance, *not acid*, formed by the combination of some simple body with *oxygen*, it not being at that time known that any of the oxides possess acid properties. The same termination, as indicative of combination, is added to the first syllable or syllables of the names of other elements. Thus, from *chlorine*, *sulphur*, *phosphorus*, *iodine*, *carbon*, *bromine*, and *nitrogen*, we have respectively *chloride*, *sulphide*, *phosphide*, *iodide*, *carbide*, *bromide*, and *nitride*. These words, and others formed on the same analogy, are often spelled without the final *e*, and some writers have therefore omitted the *e* from *oxide* also; but this form of the word (oxid) is very unusual. From an oversight of the history and true composition of the term, many have been led to write a *y* instead of *i* in the last syllable, *oxyd* or *oxyde*, as if the *y* were necessary to represent the υ of the Greek ὀξύς; whereas in the original formation of this word, no immediate reference was had to the Greek, as has already been shown. Besides, it may be observed that the Greek itself has other words, such as ὄξος, ὀξάλειος, ὀξαλίς, ὀξίνα, etc., formed from the same root as ὀξύς, but without the υ of that adjective, or in which the υ is changed into some other vowel. The orthography *oxide* or *oxid* is, therefore, both historically and etymologically to be preferred; and not only so, but it is better supported by usage than *oxyd* or *oxyde*, being the form of spelling adopted by the great majority of chemists and scientific writers both in England and America."

I have referred to De Morveau's 'Mémoire sur le Développement des Principes de la Nomenclature Méthodique,'* and have there found, at page 56, the following corroboration of what I have just quoted from Webster's Dictionary:—"Nous avons donc dû chercher une expression nouvelle, et pour la rendre conséquente à nos principes, nous avons formé le mot *oxide*, qui d'une part rappelle la substance avec laquelle le métal est uni, qui d'autre part annonce suffisamment que cette combinaison de l'oxigène ne doit pas être confondue avec la combinaison acide, quoiqu'elle s'en rapproche à plusieurs égards." It will be observed that in the above extract we have ox*i*gène; indeed the want of uniformity in the orthography employed by the scientific men who were associated in the construction of the new system of nomenclature is somewhat remarkable. Lavoisier, de Morveau, and de Fourcroy, are all agreed as to the spelling *oxide*; but while the first-named chemist spells *oxygène* with a *y*, the others spell it with an *i*, although in the memoir referred to, the origin of the word is thus given:—"nous avons satisfait à ces conditions en adoptant l'expression, d'*oxigène*, en la tirant, comme M. Lavoisier l'a dès longtemps proposé, du Grec ὀξύς, acide, et γείνομαι, j'engendre." Again, de Morveau differs from his colleagues in writing hidrogène. I should therefore not have been surprised to find the orthography oxide accompanied by a statement that the term was formed directly from the Greek ὀξύς. Such, however, is not the case.

Having, I think, written enough to show that we are not justified in condemning the orthography oxide, I pass to the consideration of the other terms mentioned by Dr. Harley as instances of error and inconsistency in the conversion of the upsilon. The charge against plumbi ox*i*dum on the one hand and lithargyrum on the other has already been met by the justification which has been given of the spelling ox*i*de, since the latter term is admitted to be derived from λίθος and ἄργυρος. Let us therefore take the next words, namely, glyc*e*rine and glycyrrhiza. "Here," says Dr. Harley, "is error and inconsistency both; for if," he adds, "*e* were the proper substitute for υ in the former word, *y* could not be the equivalent of υ in the other, the root in both cases being the same—γλυκύς." But, I ask, is it certain that the root in both cases *is* the same? Admitting that glycyrrhiza is formed from γλυκύς and ῥίζα, does it not appear more reasonable to look to γλυκερός, a word equivalent to γλυκύς, as the source of the word glycerine, in which case the ordinary spelling is etymologically correct? In the new edition of Webster's Dictionary, γλυκερός, and not γλυκύς, is stated to be the source of the word glycerine. I may mention that in the hope of finding a verification of this, I referred to a translation of Scheele's 'Memoir on the Discovery of Glycerine.' It does not appear, however, that when the memoir was published, a specific name had yet been given to the body which we now know as glycerine.

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* 'Méthode de Nomenclature Chimique proposée par MM. de Morveau, Lavoisier, Bertholet, et de Fourcroy.' Paris, 1787.

Dr. Harley also incidentally refers to the fact that it has become customary to write ch*e*mist instead of ch*y*mist. This he does in such a way as to indicate that he considers the use of the *e* to be an instance of "orthographical degeneracy." To what extent we are justified in sharing this opinion, we shall presently see. It must be admitted that Richardson, in his Dictionary, gives ch*y*mist as the correct orthography, and adds, "Perhaps from χυμα, from χευειν, to pour;" and that Wright* also, under the heading ch*y*mistry, has the following:—"The word appears to be derived through the Greek from the Arabic, and came into use during the middle ages. The old, and therefore (as far as it belongs to the English language) the correct orthography is *chymistry*; but it has recently become fashionable to write it *chemistry*." But, on the other hand, in the new edition of Webster's Dictionary we find ch*e*mistry, and in Ogilvie's Dictionary the same form of the word appears, accompanied by this explanation:—"It is the Arabic kimia, the occult art or science, from kamai, to conceal. The common orthography is from χεω, to melt or fuse; the old orthography, *chymistry*, was from χυω, the same word differently written." Again Dr. Latham, in his new dictionary, gives the preference to the same form, namely, ch*e*mistry, in the ensuing terms:—"Chemistry. 'Chymistry—[is] derived by some from χύμος, juice, or χύω, to melt; by others, from an oriental word, kema, black. According to the supposed etymology, it is written with *y* or *e*. Some deduce it from the name of a person eminently skilled in the science, whose name, however, is written both Χύμης and Χίμης. Others consider Chêmi, the Coptick name of Egypt, which was the cradle of this science, as the original.'—*Johnson*, *Dictionary*, in voce. 'It is derived from *chemia*, and that word from Cham ....' —*Bryant*, *Ancient Mythology*, iii. 299. [The principle that condemns *y* is stated under Alchemy. To apply this, it is not necessary to suppose that the derivation from the Greek χύμος has actually been disproved. It is sufficient for it to be doubtful; the rule being that *y* is only to be used when it is *certain* that it represents a Greek upsilon.]" The principle above referred to by Dr. Latham is thus stated by him:—"Both *alchemy* and *chemistry* are spelt with an *e* rather than *y*, the reason being this. The proper etymological use of *y*, as a vowel, when not at the end of a word, is to represent the Greek *upsilon* in words which have reached us through the medium of the Latin. Practically this means *all* words containing that sound . . . . Now the principle here involved should be limited rather than extended; and as both *chemistry* and *alchemy* are words of doubtful origin, the practice which prefers *e* is adopted."

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* 'The Universal Pronouncing Dictionary,' compiled by competent persons in the different branches of Literature and Science, under the direction of Thomas Wright, Esq., M.A., F.S.A. London and New York. [N. D.]

Thus, in each instance given by Dr. Harley, the orthography condemned by him is capable of justification, and more than this, it can in every case be justified without the employment of any improbable theories.

THE MEDICINE STAMP AND LICENCE.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—In an article which appeared in your last number on "The Medicine Stamp and Licence," you speak of a probability of the laws relating to this subject coming under the consideration of Parliament during the ensuing Session, and you invite an expression of opinion by those interested in the question.

When you say that these laws are involved in obscurity, and scarcely comprehensible even to officials whose business it is to give an authoritative reading, you but state that which is well known to all who have had occasion to communicate with the Board of Inland Revenue respecting them, and beyond all doubt that is "*one ground upon which an alteration of the law may probably be proposed.*" I know not whether we may hope "*possibly to do away with the existing regulations altogether,*" although, since your article has attracted the attention of pharmacists, I have heard such a solution of the difficulty confidently anticipated. At the first blush of the thing, an abolition of the stamp and licence appears desirable, not as relief to makers and vendors of patent medicines, but as the removal of an apparent encouragement of quackery. Any sensible pharmacist who reads the pestilential stuff which envelopes a bottle of "Cordial Balm," or "Restorative Elixir," must feel ashamed that the Government should, for the sake of a few pence, permit a stamp to give a sort of quasi-approval to such trash; and regarding the question from that point of view, the revocation of the laws would be a public benefit. There are, however, other views to be taken; and I know it is thought by men well qualified to judge, that the duty being removed altogether would increase the number of "proprietary" medicines. A trade-mark might easily enough mislead the public, and every village huckster might help to thin the population by selling penny or twopenny packets of antibilious pills. I am not speaking at random, for I have seen the advertisement of a pharmaceutical chemist in a provincial paper, announcing that his pills, at such prices, may be had of all village grocers in the district.

The Chancellor of the Exchequer may be anxious to advance sanitary reform and technical education, but I confess I am doubtful whether, on so indistinct a prospect of doing it, he will sacrifice £66,000 a year from the revenue, even though that sum may seem but small in his budget. We have seen how difficult it is even to remove the imposts on necessaries of life, and I therefore think, especially as we cannot call quack medicines necessaries, that it would answer our purpose better to consider the other four propositions which you mention:—

1. One uniform charge for licence.

2. In addition thereto, that licences should be granted only to Registered Chemists and Druggists.

3. Abolition of licences and application of the law imposed on the sale of other medicines to stamped medicines.

4. In addition to 3, some increase in the value of stamps.

As to the first, I believe it would be a great advantage to equalize the licence; that the revenue would not suffer if all vendors paid ten shillings per annum;

that the labour of the officials would be considerably lessened; that the advance in the country from 5*s*. to 10*s*. would restrict the sale practically to a better class of tradesmen; and that a certain present injustice would be remedied, inasmuch as patent medicines have a larger sale in the country than in London.

When I come to No. 2, I feel that "Registered Chemists and Druggists" could never ask for such a monopoly.

No. 3 I do not comprehend, inasmuch as I know of no "law imposed on the sale of other medicines," unless you are thinking of such as contain poison.

No. 4. Increase the value of stamps if you like. Quackery is fair game, and money must be had.

But, beyond all, whatever you do, let the laws regarding proprietary medicines be consolidated; let it be distinctly known what makes a medicine liable to duty; and let the term "patent," which has become a misnomer, give place to "proprietary," which is now a proper description of the preparations sold under the protection of a stamp.

I have accepted your invitation to express an opinion early, because I know if the subject is to come before Parliament next year, the present is the time to speak.

With much respect, I am, Sir, yours, etc.

December, 1869. UTILE.

OUR EVENING MEETINGS.

BY A. F. HASELDEN.

"Once more unto the breach, dear friends, once more."

Some years have passed away since I first offered a few remarks upon our evening meetings, addressed not only to those who were willing and able, and by their works had proved themselves so, to contribute towards making those meetings interesting, instructive, and successful in carrying out the object in view, when they were originally instituted,—to those also who might feel that they had done their share of work and desired to make way for younger men, whose studies were of a more recent character, and lastly, to encourage those who from diffidence or timidity might hesitate in bringing for discussion subjects interesting to them, but of doubtful importance to others. I venture to make myself conspicuous once more with a similar object, indeed I feel no hesitation about it,—at these monthly gatherings, there is a fair and legitimate opportunity for comparing notes and working out pharmaceutical problems, for which, perhaps, there is no time or place more suitable. To this interchange of ideas all Conferences tend, whether held at Exeter or Vienna; where then can a better nursery, if I may so say, for these interchanges be found than in the lecture hall of our own Institution, where the very discussion which naturally follows the reading of a paper leads to a fuller development of the subject? Not many years ago, there existed in connection with the parent Society, a chemical discussion association, composed chiefly of young aspiring pharmaceutists and chemists, and in one year of its proceedings it was a notorious fact, that the greater portion of the papers read at our evening meetings—and good papers, too—emanated from this branch, since then extinct; and though I should not rejoice to see it re-established, I ask, whither has fled the spirit which prompted these young and assiduous labourers, and why do not fresh ones enter the arena? I see before me visions of former evenings, and I see also attached thereto incentives to wider fields of inquiry, and the stepping-stones to future enterprise and appointments. I see the career of some widening year by year, until success may truly be said to have crowned their unyielding efforts.

Many of the improvements in the second edition of the 'British Pharmacopœia' are in some measure the result of comparing notes and discussing the question at these very evening meetings, and why not again the instrument of pharmaceutical progress,—though some have grown lukewarm, and others become imbued with a peripatetic spirit,—is that a reason that there should be any scarcity of workers where there is so wide a field for operations?

Some, perhaps, may feel aggrieved if their crotchets or pet ideas do not meet with that approval which they had fondly hoped, but this will not be the case with the true seeker after knowledge, it will only make him work the more, "Contredire c'est quelquefois frapper à une porte, pour savoir s'il y a quelqu'un dans la maison."

In this matter we all stand upon the same footing; the youngest and the oldest may exchange and parry thrusts, the pupil and the professor give and take, the employer and the employed compare results, even the stern and much dreaded examiner may be challenged by the unassuming examinee.

What more can I write as an inducement to accept the invitation? the lecture hall has been redecorated and made worthy of your presence. I cannot add—would that I could!—that the ladies will be there to listen to and applaud you, but they will hear of your efforts, and tacitly at least smile their approval. Remember, the opportunities during the Session will be few,—probably only five; remember, also, if the young come forward, those who have worked long in the service will obtain some respite, and the world of pharmacy will cry shame upon the young if they suffer those still to keep watch and fill the post of the able-bodied, who should, by right of age and former labours, rest upon their oars and glide gently down the stream, occasionally steering the good ship into still waters.

EXTRACT FROM THE 'LONDON GAZETTE'

Of Tuesday, December 21, 1869.

The Pharmacy Act, 1868.—Poisons.

Whereas by section 2 of the "Pharmacy Act, 1868," it is enacted that the Council of the Pharmaceutical Society of Great Britain may from time to time, by resolution, declare that any article in such resolution named ought to be deemed a poison within the meaning of that Act, and thereupon the said Society shall submit the same for the approval of the Privy Council; and that, if such approval shall be given, then such resolution and approval shall be advertised in the 'London Gazette;' and that, on the expiration of one month from such advertisement, the article named in such resolution shall be deemed to be a poison within the meaning of the said Act:

Notice is hereby given, that the Council of the Pharmaceutical Society of Great Britain did, on the 1st day of December, 1869, resolve and declare, in the words following:

By virtue and in exercise of the powers vested in the Council of the Pharmaceutical Society of Great Britain, the said Council do hereby resolve and declare that each of the following articles; viz.:—

Preparations of prussic acid,
Preparations of cyanide of potassium and of all metallic cyanides,
Preparations of strychnine,
Preparations of atropine,
Preparations of corrosive sublimate,
Preparations of morphine,
Red oxide of mercury (commonly known as red precipitate of mercury),

Ammoniated mercury (commonly known as white precipitate of mercury),
Every compound containing any poison within the meaning of the "Pharmacy Act, 1868," when prepared or sold for the destruction of vermin,
The tincture and all vesicating liquid preparations of cantharides,

—ought to be deemed a poison within the meaning of the "Pharmacy Act, 1868;" and also that of the same each of the following articles; viz.:—

Preparations of prussic acid,
Preparations of cyanide of potassium and of all metallic cyanides,
Preparations of strychnine,
Preparations of atropine,

—ought to be deemed a poison in the first part of the Schedule A to the said "Pharmacy Act, 1868."

And notice is hereby also given, that the said Society have submitted the said resolution for the approval of the Lords of her Majesty's Council, and that such approval has been given.

By order,
ELIAS BREMRIDGE,
Secretary and Registrar of the Pharmaceutical Society of Great Britain.

NOTES AND ABSTRACTS IN CHEMISTRY AND PHARMACY.

BY C. H. WOOD, F.C.S.

The Oxidation of Pyrogallic Acid.

M. A. Girard has published the results of some researches on certain products of the oxidation of pyrogallic acid. An oxidizing agent, acting upon an alkaline solution of pyrogallic acid, produces oxide of carbon, carbonate and acetate of the alkali, and some deeply-coloured uncrystallizable substances. Oxidized in an acidified liquid, pyrogallic acid splits up into oxidized products, of which carbonic oxide and carbonic acid are the chief, and a peculiar reduced product which is the subject of M. Girard's investigation. A mixture of solutions of nitrate of silver and pyrogallic acid, for example, furnishes a deposit which is found to consist of reduced silver, and a neutral, volatile red substance, soluble in spirit, and presenting a remarkable resemblance to the alizarine and purpurine extracted from garancine. The composition of this body is $C_{20}H_{16}O_9$. It is best prepared in quantity by the action of permanganate of potash and sulphuric acid. 60 grammes of permanganate are dissolved in a litre of water, and 55 grammes of monohydrated sulphuric acid added; this solution is cautiously dropped into the pyrogallic acid dissolved in a small quantity of water, elevation of temperature being avoided as far as possible. 250 cubic centimetres suffice for 10 grammes of pyrogallic acid. The mixture is immediately coloured deep yellow, and soon becomes turbid, disengaging with effervescence a mixture of carbonic oxide and carbonic anhydride, and depositing crystalline flocks of a fine orange-red colour. This orange substance is washed with a little water, and then recrystallized from alcohol, or sublimed. The product is anhydrous, and in either case possesses the same composition and properties. The author names it *purpurogalline*. The proportion obtained is about 12 per cent. of the weight of the pyrogallic acid. It is necessary to avoid too great an excess of the oxidizing agent in its preparation, because the purpurogalline is itself oxidizable into a brown uncrystallizable substance. The reaction occurring may be represented by the two following equations:—

$$4(C_6H_6O_3) + O_5 = C_{20}H_{16}O_9 + 4CO + 4H_2O$$
$$4(C_6H_6O_3) + O_9 = C_{20}H_{16}O_9 + 4CO_2 + 4H_2O.$$

Sublimed purpurogalline occurs in the form of garnet-red needles, more coloured and more brilliant than the crystals of alizarine. Its sublimation is accompanied by a slight decomposition, but this is easily avoided by projecting the substance on a bath of mercury heated a little above 200° C. It is slightly soluble in water, more soluble in alcohol, ether, and benzol. Sulphuric acid dissolves it, forming a compound, crystallizing in crimson-red needles, decomposed by water. Nitric acid destroys it, yielding picric acid. The alkalies give with it a fine blue colour, changing to green and yellow.

Crystallized Subacetate of Lead.

M. Jeannel gives the following process for preparing subacetate of lead in crystals:—

Crystallized Acetate of Lead . .	6 parts
Pure Oxide of Lead	2 ,,
Water	1 ,,

Triturate the salt and the oxide together, then add the water. Heat the mixture in a porcelain capsule, stirring gently with a glass rod. Fusion takes place at about 65°, and ebullition at 102° C. After boiling two or three minutes, the liquid is filtered through paper in a funnel heated by a water-bath. The subacetate of lead thus obtained crystallizes on cooling in silky tufts, leaving a very small quantity of mother liquor.

Reactions of Morphia and Papaverine.

MM. Hofman and Schroff indicate a means of distinguishing between these two alkaloids, morphia and papaverine. The double iodide of potassium and cadmium gives with papaverine a small white precipitate, which collects into pearly scales; while with morphia, even in very dilute solutions, it gives fine crystalline needles, which are very characteristic. By a microscopic examination, these two precipitates may be easily distinguished.

Petrified Concrete.

Some works have recently been established in the neighbourhood of Victoria Park for the manufacture of artificial stone by a new process. It has been known for some time that Portland cement, or any concrete containing lime, can be rendered extremely hard by immersion in a solution of silicate of soda. Under these circumstances, the silica is absorbed by the lime, and the cement thereby converted into a true stone. But the cost of the silicate of soda has hitherto rendered such a process too expensive for general application. The proprietor of the works we refer to has overcome this obstacle in a most ingenious manner. Beneath the chalk beds of Surrey, in the neighbourhood of Farnham, there exists a plentiful deposit of a soft stone, containing 25 per cent. of silica, in a condition in which it is soluble in a cold solution of caustic soda. This material the inventor grinds up and diffuses through the bath of silicate of soda, containing the concrete to be petrified. The lime, removing silica from the solution, liberates caustic soda, which dissolves fresh silica from the Farnham stone. The process thus becomes a continuous one. The soda acts as a carrier of silica from the stone to the cement. By due care, the solution of silicate of soda may be maintained of constant strength, and is therefore capable of performing an almost indefinite amount of work. The expense of the silicate of soda being once defrayed, the cost of petrifying the concrete is simply the value of the Farnham stone, and the labour of applying it. No heat is required in any part of the process, and the work is therefore very simple.

So cheaply can this new material be produced, that it is proposed to apply it to the construction of paving-stones. In this case granite chippings are worked up with Portland cement into a mass which is moulded to the required shape, allowed to dry by exposure to the air, and then hardened by immersion in the bath of silicate. The stone so made is said to wear longer than the best Yorkshire flagging. "Petrified concrete" is also specially applicable to the construction of cornices, copings, etc. Water cisterns, sinks, tanks, and even water pipes are made of it. Being quite impervious to moisture, it resists the frost well, and time rather increases its hardness than otherwise.

COMMITTEE OF THE BRITISH ASSOCIATION ON THE TREATMENT AND UTILIZATION OF SEWAGE.

22, *Whitehall Place, London, S.W.*
November 30th, 1869.

Sir,—I have the honour to inform you that, last year, at the meeting of the British Association at Norwich, a committee was appointed to report on the treatment and utilization of sewage. In the first instance, a grant of £10 was placed at the disposal of the committee, with which to defray the cost of printing and postage incidental to the collection of preliminary statistical information. Through the kindness of her Majesty's Government, the committee was enabled to obtain reports respecting the methods of dealing with town refuse practised in most civilised countries, and that information has now been collected in a more complete form than hitherto existed in any country.

This preliminary work being completed, the committee was reappointed at the meeting of the British Association this year at Exeter, and the inquiry was considered to present such important features of social and scientific interest, that the sum of £50 was voted towards enabling the committee to enter more fully and practically upon the investigation of this subject. The British Association, being a purely scientific body, has not at its disposal funds which would be adequate or applicable for the full prosecution of this very large and pressingly-important inquiry. The committee nevertheless desires to take advantage of the opportunity created by the British Association, to investigate the entire subject in all its bearings—whether chemical, physiological, or engineering, sanitary, municipal, or agricultural—and in a manner worthy of the body they represent.

It is unnecessary to point out the enormous importance, especially at the present time, of a full and complete investigation of this question by the light of the knowledge and experience now gained in the several departments above alluded to; but, properly to carry out such an inquiry with a practical end, numerous observations, gaugings, and experiments, aided by simultaneous analyses, are essential; and these cannot be accomplished, especially the analyses, without the continued aid of efficient and therefore highly-paid assistants. Moreover, from time to time it may be necessary for the committee to purchase expensive apparatus, and to subject various inventions and processes to a thorough and complete test; for it is the desire of the committee, not only to ascertain, as far as possible, the causes of the sanitary inefficiency of existing works; but also to inquire into every suggestion which affords promise of practical utility, in order that this investigation may be searching, the report practical, and any recommendations that may be made authoritative.

It is the wish of the several members of the committee to devote, to the utmost of their ability, their personal attention to the work thus sketched out; but the expenses absolutely necessary to enable them to conduct so extended an inquiry cannot but be very heavy, and, unless they are able to secure an adequate fund, they must abandon the attempt to investigate the subject in this broad and comprehensive manner. However, since there is no subject of greater practical and social importance to the public generally, and thus to the various municipal authorities and other governing bodies throughout the country, it is believed that many will share the opinion expressed at the recent meeting of the British Association at Exeter, that the existence of this committee affords a specially favourable opportunity for such a wide inquiry, and for that reason its members confidently appeal to those authorities who are officially interested in the subject to supply the funds necessary for the investigation.

I am therefore desired to request that you will kindly submit this letter to the body you represent, and I venture to hope you will give the committee the benefit of your good offices in procuring a subscription proportionate to the population of your town or district.

It is suggested that the subscriptions of towns of different populations might be graduated somewhat in the following proportions:—

	£.	s.	d.
Where the population does not exceed 10,000	5	5	0
Between 10,000 and 25,000	10	10	0
Between 25,000 and 50,000	21	0	0
Between 50,000 and 75,000	30	0	0
Between 75,000 and 100,000	50	0	0
Above 100,000	100	0	0

I beg to call your attention to the accompanying list of members of the committee, and to inform you that all public bodies subscribing not less than £5. 5*s.* 0*d.* will have the benefit of the information from time to time as the results of the inquiry partake of a conclusive character, and will receive a copy of the report of the committee when published.

I have the honour to be, Sir, your obedient servant,
George F. Barnes, *Honorary Secretary, pro tem.*

The following are the names of the committee:—

Richard B. Grantham, Esq., M. Inst. C.E., F.G.S., *Chairman.*
J. Bailey Denton, Esq., M. Inst. C.E., F.G.S.
J. Thornhill Harrison, Esq., M. Inst. C.E.
Benjamin H. Paul, Esq., Ph.D., F.C.S.
Professor Wanklyn, F.C.S.
William Hope, Esq., V.C.
Professor Williamson, Ph.D., F.R.S.
Professor Marshall, F.R.S., F.R.C.S.
Professor Corfield, M.A., M.D.
M. C. Cooke, Esq., and
Sir John Lubbock, Bart., F.R.S., *Treasurer.*

Subscriptions should be paid to the credit of Sir John Lubbock, on behalf of the Committee, at Messrs. Robarts, Lubbock, and Co., 15, Lombard Street, London, E.C.

THE THEORY OF POISONING BY PHOSPHORUS AND PYROGALLIC ACID.

Dr. J. Emerson Reynolds gave a short account of some new experiments on this subject at the last meeting of the Dublin Scientific Club. The following were the chief points referred to:—

M. Personne recently communicated to the French Academy of Sciences the results of some experiments which he regarded as singularly corroborative of his chemical theory of the poisonous action of phosphorus on the animal system. He believes that absorbed phosphorus poisons by abstracting the oxygen from arterial blood, and so neutralising the aerating functions of the lungs. If this be the true *modus operandi* of the poison, any substance capable of preventing the oxidation of phosphorus ought to prove an antidote. It has been long known that the vapour of oil of turpentine greatly interferes with the action of oxygen on phosphorus. The circumstance led M. Personne to administer turpentine in several cases of acute poisoning by phosphorus, with the happy result of saving human life. Desiring to obtain further proof of the truth of his theory, M. Personne sought for some chemical substance capable of absorbing oxygen with as great avidity as phosphorus does. He speedily fixed upon pyrogallic acid as being most suitable for use in further experiments. This substance, *when present in a slightly alkaline fluid*, such as blood, has the power of absorbing oxygen with great energy. Two healthy dogs were taken, and into the stomach of one a dose of two grains of pure pyrogallic acid dissolved in water was injected, while twice this amount was administered to the second dog. The animals died after fifty and sixty hours respectively, presenting most of the symptoms generally attributed to phosphorus poisoning; and on *post-mortem* examination the muscular tissue of the heart was found in each case to have suffered the fatty degeneration well known to follow the administration of poisonous doses of phosphorus. The antidote to pyrogallic acid would appear to be an acid solution of chlorate of potassium.

As pyrogallic acid is largely employed in photography, and has been hitherto considered a perfectly harmless substance, the fact of its possessing powerful toxic properties cannot be too widely known; but increased interest attaches to this circumstance, since it strongly supports the chemical theory of phosphorus poisoning proposed by M. Personne; for we have here two bodies whose *only* point of similarity consists in the energy with which each is capable of combining with oxygen, and both these substances are stated to act in almost precisely the same way on the animal economy.

I may add here that the chemical relation of pyrogallic to gallic acid is a very simple one, and the connection of both with common carbolic acid and benzole, a matter to which singularly little attention has been hitherto given. This relationship may be shown in the following way:—

Gallic acid	$C_6H_2\left\{\begin{matrix}(OH)_3\\CO_2H\end{matrix}\right.$
Pyrogallic acid	$C_6H_3\ (OH)_3$
Carbolic acid	$C_6H_5\ OH$
Benzole, or benzine	$C_6H_5\ H$

Taking *benzole* as the starting-point of the series, it is only necessary to replace one atom of hydrogen in it by the group OH, or hydroxyl, in order to produce *carbolic acid.* When this replacement of hydrogen is carried two steps further, we get *pyrogallic acid;* and when to this latter body CO_2, or carbonic anhydride is added, we have *gallic acid.*—*Medical Press and Circular.*

CASES OF POISONING—ACCIDENTAL AND CRIMINAL.

Death from eating Chrysanthemums.—On Friday, November 26, an inquest was held by Mr. Blagden, coroner, Westbourne, on the body of a child, Eliza Better, who was poisoned by eating a number of chrysanthemum blooms, which had been given to her at school.

Accidental Poisoning by Belladonna.—An inquest was held by Dr. Lankester on Wednesday evening, December 15, at the Ormond Street Hospital for Children, on the body of Rosina Roberts, a nurse. From the evidence it appears that deceased had laid out a child a few mornings since, and feeling somewhat sick after it, went into the room of another nurse, who told her to take a little brandy. Deceased in mistake took some belladonna liniment which she had placed there herself. She spat it out when she found what she had swallowed, and shortly afterwards went about her work as usual; a little while afterwards she became giddy, and wanted to go to the surgeon. Thinking she was intoxicated, a fellow-nurse prevailed on her not to go. She was shortly afterwards found insensible, every means were tried to restore her by the house surgeon, but a little while afterwards she expired. There was some discussion among the jurors about the danger of leaving poison in a common glass bottle, though the one in question was well labelled. The jury returned a verdict of "Death from accidental causes."

Poisoning by Opium.—On Saturday, December 4th, Agnes Woodford, aged twenty, was tried before Mr. Justice Blackburn on the charge of administering to her child a quantity of opium with intent to kill him. The prisoner and her illegitimate child had been inmates of the Barrow-upon-Soar Union Workhouse. The medical officer, from the symptoms he had observed, was convinced that the child was being poisoned with opium. The child died a few days afterwards. It was proved that a parcel, sent by a man named Goodacre to the prisoner, and intercepted by the porter, was found to contain opium in a solid form. The man Goodacre was afterwards seen to stop at the workhouse and talk with the prisoner, who was at one of the windows. Witnesses were also called to prove the cruel treatment of the prisoner to her child. For the defence it was urged that the prosecution had failed to show the intention of the prisoner to kill her child, and that if anything had been given, it was probably in the form of "Godfrey's Cordial," with a view to soothing the child. His Lordship, in summing up, left it to the jury to say by their verdict whether opium was administered by the prisoner, maliciously, with the intention of killing the child, or whether culpably and negligently, but without the intention to kill. The jury returned a verdict of "Not Guilty."

THE CHEMISTS' ANNUAL BALL.

This gathering, which now appears to be firmly established, will be held at Willis's Rooms, King Street, St. James's, on Wednesday, the 19th of January, 1870, on which occasion we hope to see a goodly number of pharmaceutists, who may be glad, on one evening in the year, to throw aside their professional cares.

REVIEW.

OUTLINES OF CHEMISTRY, OR, BRIEF NOTES OF CHEMICAL FACTS. By WILLIAM ODLING, M.B., F.R.S. London: Longmans, Green, and Co.

The author says in his preface, "this book consists substantially of the notes from which I have lectured for the last seven years at St. Bartholomew's Hospital." It is essentially a student's book, and one that in its general character differs from most others. It is not intended to impart knowledge by describing and explaining facts and theories in terms most easy of comprehension, so as to lighten the work of the student and enable him to glide through the matter with the smallest possible strain upon his mental powers; but on the contrary, it requires the full exercise of the faculties, and some amount of previous knowledge of the subjects to make its terse language and brief allusions intelligible and instructive. "It aims at calling to mind, in as few words as possible, the ascertained origins, properties, and metamorphoses of the chemical substances to which it refers." Those who are prepared to use it as an aid to serious study, as an indicator of the matter, a knowledge of which should be acquired, and of the order in which facts may be advantageously arranged for the elucidation of laws and theories, will find it a valuable note-book. The matter it contains, however, is not food for babes, but strong meat requiring a good digestion, and to those who are capable of its assimilation, it will impart increased strength and vigour by bringing all their powers into operation, while at the same time it will serve to indicate weakness where it exists, and thus prompt the student to the acquirement of such further knowledge as he finds to be requisite.

The following sensible remarks on the subject of chemical nomenclature are worthy of the liberal mind and independent spirit of the author.

"In the present unsettled state of chemical notation and nomenclature, I think it right to add a few words explanatory of the course which I have adopted in relation thereto.

"Throughout the book, but especially in the latter chapters, I have made considerable use of the modes of expression advocated more particularly by Dr. Williamson. But while freely employing such terms as ferrous sulphate, cupric nitrate, zinc chloride, etc., I have not thought it necessary, nor do I think it advisable, to discard altogether the older modes of expression, sulphate of iron, nitrate of copper, chlorate of zinc, etc. In so unimportant a matter as this, I have no desire to limit myself to one particular set of phrases; and, accordingly, I use in the book, as I have both the habit and the intention of using in oral address, the two sets of terms indifferently and alternatively."

And again, he says, "the preference habitually accorded by different chemists to trivial or to systematic names for general use, is largely a matter of individual liking. For myself, I like, where they are sufficient for the purpose, to employ such trivial names as nitre, alum, potash, borax, green-vitriol, bleaching-powder, sal ammoniac, muriatic acid, prussic acid, alcohol, wood-spirit, marsh-gas, chloroform, acetic ether, phosgene, etc. etc., alternatively with the systematic names for the respective compounds."

In the arrangement of the matter there is no distinction observed between organic and inorganic substances, such of the former as are treated of being included among the carbon compounds. An extension of this department might, we think, have been made with advantage, for at present it is confined to the lowest series of compounds or those containing one atom of carbon; there would no doubt be a difficulty, within the limits of a course of lectures, in treating as fully of organic compounds as the importance of the subject and the requirements of the student appear to demand, but we cannot help thinking the author has curtailed this part of the matter unduly, and the able manner in which he treats other subjects makes one wish for a further extension of this.

BOOKS RECEIVED.

THE POST-OFFICE DIRECTORY OF CHEMISTS AND DRUGGISTS; containing Lists of the Chemists and Druggists throughout England, Manufacturing Chemists, Wholesale Druggists, Patent Medicine Vendors and Manufacturers, and every Trade in connection therewith. To which is appended a List of the principal Wholesale Druggists and Manufacturing Chemists throughout France. London: Printed and published by Kelly and Co., Great Queen Street. 1869.

The obvious use to Pharmaceutists of this book of reference will be seen from the title as given above. The classification of the various branches of the trade in connection with the names of those who carry on the same, the alphabetical arrangement of places under the various counties, are both useful features in the work; and now that communication with the Continent is so much extended, that portion devoted to French manufacturers of chemical products will be welcome to many. We should like, however, to know what class of persons the compiler intended to comprise under the head of "Pharmaceutical Manufacturers," for we find this heading to a list of names.

A MANUAL OF DIET FOR THE INVALID AND DYSPEPTIC, with a few Hints on Nursing. By DUNCAN TURNER, Licentiate of the Royal College of Physicians, etc. etc. London: John Churchill and Sons, New Burlington Street. 1869.

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the EDITOR, 17, Bloomsbury Square. Those received after the 20th of the month cannot be noticed in the ensuing number.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to ELIAS BREMRIDGE, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. CHURCHILL, New Burlington Street, London, W.

CO-OPERATIVE TRADING.

Sir,—Seeing an article in your November Journal upon Co-operative trading, and feeling myself referred to therein, I think it right to inform you that I have withdrawn from the Civil Service Co-operative Association.

Some two or three years ago, their secretary offered me certain terms, which I viewed in the light of a contract, to serve Government officials, *bonâ fide*, and residing in my locality, with medicines at reduced prices. At that time I did not consider I was lending my support to a system calculated to injure that trade. I was not aware it would extend so far as it has, nor that it sought to undermine trade, as it appears to be doing at the present time, or I should never have had anything to do with it.

I trust my brother Pharmaceutists will believe me, when I say that I have not, nor ever had, a wish to take an unfair advantage of them in trade, or would seek to lower its standard for my own benefit.

I am, Sir,
Your obedient servant,
R. S. STARKIE.

4, Strand, December 16th, 1869.

Sir,—We were told that from the date of our Charter of Incorporation we might expect and hope to obtain "improved prices," which, of course, would imply "increased profits" instead; at the present time we have to experience the effect of great depression in trade, and to look a matter in the face which will tend to deprive us of ALL profit. I refer to a subject of grave import to us; the establishment of the Civil Service Associations, which, in the first instance, were proposed for Civil servants only, but now are generally open to the public.

It is to confront this matter that I beg to call your attention, and ask for your aid and advice to help to meet the emergency. I wish to impress on our members the desirability to join a general meeting, to confer upon and discuss the matter, to try if any means can be proposed, such as a deputation to the wholesale houses, or a request to them by circular, asking for their kind consideration, that whereas some houses did serve the Association, that it was a grievous wrong done to their quondam customers, and praying them either to discontinue to do so, or to put them upon a different tariff to the chemist; that the public should not be able to get Cockle's pills at 9½*d.* or 10*d.*, and rhubarb at so many pence per ounce, so that some of the stigma of being deemed extortionate, because we require to be paid the advertised price, or to reap a fair profit, may be wiped away. I feel assured that if such request be fairly and temperately made, most of the respectable houses would listen to and entertain it, and it may be the means of preventing a mass of ill-feeling which is growing at the present time. And I think it but just and fair to ask those whom the retail have helped to support, to assist us in a case like this.

The Association goes in for *no* profit; we avowedly live BY our profits, or why should we invest capital and give up our time to the responsibility and trouble of trading, but to enable us to pay our way, to live by our labour, and, if fortunate enough, to lay by some provision for old age? We have been termed a nation of shopkeepers, and I doubt not that many rather rejoice in the name, than wince under the taunt that was intended; but we shall soon find our trade departing to establishments which do not trade in the true sense of the term.

It has been hinted to offer to supply the public at so much per centum reduction, but I maintain the chemist cannot afford to do it, because we should be giving away that very portion that comes to ourselves in the shape of profit; and would any of us be sanguine enough to think that by so doing he would double his returns? as unless it so resulted it would be sheer foolishness, and no one would get any thanks from the public for the sacrifice.

I consider the time for action should be immediate.

I am, Sir, your obedient servant,

JOHN T. TUPHOLME.

80, *Lamb's Conduit Street.*

Dear Sir,—The November number of the Journal contained some well-written letters on the above subject, and it is with the view of arousing the trade to a sense of the dangers which threaten it, that I add my testimony to that of Mr. Urwick and others.

The practice of under-selling, so justly condemned by one of the writers, is unfortunately not confined to co-operative agencies. We have but to look around us, and we find chemists, to the injury of their neighbours, and certainly not to their own credit, advertising at considerably less than the average prices. For instance, in my own neighbourhood, and in a respectable thoroughfare, 6*d.* feeding-bottles are ticketed in a window at 5*d.*; seidlitz powders 8*d.* per box, and so on, whereas at another shop close by patent medicines are sold without charge for the stamp duty. This much-to-be-regretted practice condemns itself, and must eventually find its own level. In the meantime we must hope that as we advance professionally to a higher standard, the trading element will raise itself in like manner to fair and honourable competition.

So much for the dangers from within, but we have more to fear from without, and it is to this subject I wish more particularly to draw the attention of your readers, many of whom are perhaps unaware of the existence of the "Civil Service Co-operative Stores," or if they are, it is possible that there are but few who know the growing extent of business done there, or consider its probable effect on our own branch in particular. These stores were established a few years since by members of the Civil Service, for the purpose of supplying themselves with articles of demand at wholesale price, or nearly so.

To effect this object shares were issued, and the required capital paid up, since which the promoters, not content with confining it to members of the Civil Service, issued yearly tickets at 5*s.* each to friends of members; and it is a fact that the number of subscribers, at the present time, exceeds 30,000, producing an income amply sufficient to account for the prices at which goods are supplied.

The Stores are situated in Monkwell Street, Long Acre, and Haymarket (the latter belonging to another branch of the Service). On paying a visit to the Long Acre establishment, the other day, I was astonished to see almost every trade represented within its walls, and the numerous customers (chiefly ladies) that thronged each department. Passing through large rooms devoted to grocery, drapery, stationery, etc., I made my way to the drug-counter, where two or three assistants are employed, and an ordinary retail trade carried on, with this difference—everything is put up in bottles of various sizes, and labelled ready for sale, and nothing is sold from bulk. All 1*s.* articles are sold at 8*d.*, De Jongh's cod-liver oil at 1*s.* 10*d.*, patent medicines, perfumery, and proprietary articles at wholesale prices.

It was not so much curiosity that induced my visit as a wish to satisfy myself in the matter of prices, having a few days previously been shown, by Dr. Tanner, of Newington Causeway, an ounce bottle of Howard's citrate of iron and quinine, which a patient of his bought at the Stores for 1*s.* 8*d.* Surely, Sir, when our legitimate interests are at stake, it is high time to "be up and doing," for many chemists are complaining of the injury occasioned by a system which, for aught we know, may be still in its infancy.

Thus far I have pointed out dangers which surround us, but must leave to older and abler heads than mine the task of grappling with the foe, simply entertaining a hope that the agitation which has sprung up, will result in a combined meeting of the trade, backed by some of the more influential members of our Society, to consider the matter in its entirety, and, if possible, suggest a remedy.

With every apology for trespassing so much on your space,

I am, dear Sir, yours faithfully,

"PROBITAS."

PATENT MEDICINE LICENCES.

Sir,—Having been a seller of patent medicines about thirty years, and having several proprietary articles of my own, I feel considerable interest in the matter, and it is a subject that has greatly occupied my attention.

Now, although having a most clear conviction that the laws relating to patent medicines require modification and revision, I have long been decided in my opinion as to the impolicy of removing either the licence or the duty. My reasons are just these:—Were the licence abolished the number of dealers (out of our trade) would be greatly increased, and this would not only operate in injuring our trade in these articles, but in other goods as well.

I know of booksellers who not only sell an immense number of patent medicines, but who also actually themselves prescribe a great part of these to persons suffering from various ailments,—De Jongh's cod-liver oil and chlorodyne for coughs, etc., various pills, ointments, etc., for different complaints. In fact, some publish a list which is sent out by thousands, mentioning most of the diseases to which flesh is heir, with their appropriate patent medicine.

Now with regard to the medicine label, it seems to me it would be easy enough to legislate upon this point, as whenever it was desired to claim an individual interest it would be to the proprietor's advantage to secure this by the stamp. "Smith's pills" (of whatever composed) might justly be made to pay duty, but "Antibilious, or cough pills, prepared by T. Smith," should not have to do so.

If you do away with the stamp, you will, I think, have all sorts of things put up for sale; and if you do away with the licence there will be a great increase of vendors in these articles.

You will see the booksellers' windows, who have a licence, full of the various patent cod-liver oils. The grocers are now filling theirs with Price's Glycerine. And if the duty and licence be taken off, other things will soon follow.

At all events it seems an absurdity to confine the sale of certain poisons to educated persons if any one, who chooses to take out a licence, can sell chlorodyne, cough mixtures, liniments, etc. containing the most potent drugs, and if any one who chooses can sell poisonous sheep-dippings, vermin killers, etc., even without a licence; and my own opinion is, that if patent medicines be allowed, their sale should be confined to those and those alone who are allowed to sell poisons, that is, so far as the retailing is concerned.

Time will not permit me to go so thoroughly into the different bearings of the subject as I should wish, but these few crude ideas so rudely put together may not be altogether valueless, and with this hope I forward them in response to your invitation.

I am, Sir, yours respectfully,

A CHEMIST.

PATENT MEDICINES.

The following letter appeared in the 'Leicester Journal' of December 3, 1867:—

"Sir,—In one of our local papers, during the last week, I found, amongst the police reports of the 19th ult., before our Borough magistrates, that George Smith, a shopkeeper, was convicted by them in the mitigated penalty of £5, for a breach of the Excise laws, in selling patent medicines without a licence.

"It appears that an officer of the Excise went into the defendant's shop and purchased a penny box of antibilious pills, an article sold by every chemist and druggist, not only in the country, but by many small shopkeepers, through the length and breadth of the land.

"In the interest of the trade, and the public generally, allow me, through the medium of your columns, to ask our esteemed Town Clerk, and the officers of Inland Revenue the following queries:—

"1st. Is a vendor of penny or twopenny boxes of pills required by the Patent Medicine Act to take out a patent medicine licence?

"2nd. If, according to the conviction they have laid against the defendant Smith, it is compulsory to affix to each penny box of pills a three-halfpenny stamp? thus making a pennyworth of pills cost the consumer twopence-halfpenny,—'under a penalty not exceeding twenty pounds.'

"It is now become a necessity that the law should be clearly defined upon this subject, as I cannot think the Legislature, at the time of the passing of the Act alluded to, contemplated either such a hardship to that industrious and respectable class, the small shopkeepers, or such a piece of gross injustice to the public and the members of the drug trade generally. Hoping that my brother members of this department of our national commerce will at once take up and thoroughly ventilate the subject,

"I remain, Sir, yours respectfully,
"E. H. BUTLER.

"*Leicester, December* 1, 1869."

In reply to Valetudinarian's queries, I beg to inform him that English Pharmaceutical Chemists are not at liberty to open chemists' shops on the Continent on the strength of their diplomas; in fact, there is not a single English chemist in France. Those Englishmen who have Pharmacies in Paris, etc. have passed the requisite examinations, and, of course, are French Pharmaciens, and if of the first class, are at liberty to commence business anywhere. As Mentone is now annexed to France, the same rule holds good there also. M. Gras has two pharmacies at Mentone, and monopolizes all the English trade there. Although it is a case upon which I should hesitate to give a decided opinion, yet I cannot see, in face of the above stringent restrictions, any possibility of much business being done, especially by an invalid.

I am not aware of any Continental hospital requiring the services of an English dispenser; the only purely English hospital on the Continent, that I know of, is the Hospital for English and American Seamen at Naples, and there exists, I believe, a similar one at Genoa. The salaries given to English assistants in Continental Pharmacies, owned by Englishmen, are about the same as at any good West-end establishment, say from £35 to £60, in-doors; but the salary is generally progressive, commencing at £35 or £40, with an annual advance of £5 to £10; in French Pharmacies doing English trade the salaries are smaller.

If Valetudinarian is advised to winter in the South, the best plan would be to endeavour to obtain a situation as senior assistant in an English Pharmacy, or as English manager in a French Pharmacy, but at this time of the year he would find it very difficult indeed, all the vacancies being filled up in autumn, preparatory to the season.

In Pau, Nice, Biarritz, etc., the assistants are generally engaged for six months only.

Hoping this information may be of some use, I remain, etc.

PHARMACIEN.

COATING FOR PILLS.

Can you tell me how to coat pills with a tasteless white enamel? I have seen some which were like comfits in appearance, and have tried all the forms given in the Journal to imitate them, without success. I shall be glad if you, or any correspondent, can give me information on the subject.

INQUIRER.

"*Inquirer*" asks how it is that in Roscoe's 'Chemistry,' and also in Williamson's, the decimal equivalent of $\frac{1}{273}$ is written ·003665 instead of ·003663, as it ought to be. We presume the figure 5 has been substituted for 3 in printing, and the error having escaped detection has been copied from one book to another. Errors are not unfrequently carried on in this way.

T. W. P. (Leeds).—'The Pharmaceutical Latin Grammar.'

"*Glycerinum Amyli.*"—See Vol. XVII. p. 400, also British Pharmacopœia.

"*Pharmacy*" (Helensburgh).—The work in question is out of print.

"*Napoli*" informs M. Kernot that he has found the following succeed best in cleaning zinc name-plates:—Rub the plate until perfectly clean and bright with Bath brick, moistened with a little olive oil, and then polish with Paris white and chamois leather.

A correspondent inquires what the custom of the trade is, in preparing veterinary medicines, to use when "cinnabar of antimony" and "spirit of sal ammoniac" are ordered.

A. P. S.—(1.) We have no recipe for "Jockey Club Bouquet." (2.) Royle's 'Materia Medica.'

"*Viator*" suggests that the Modified examination should be held in the provinces as well as in London, as at present the expense of travelling to London prevents many from availing themselves of it.

Mr. J. T. Brown, of Dover, referring to Mr. Schweitzer's letter, in last month's Journal, on saccharated carbonate of iron, the process for which, in the Pharmacopœia, indicates 57 instead of 37 per cent. of carbonate of iron, says, that on testing a recently made sample he found 37·93 per cent. of ferrous salt.

Communications received, but too late for this month—G. R.; Chemicus; J. Houlton; Dispenser; A. C. Wootton.

ERRATUM.—Page 356, in the second formula for creasote pills, *for* ceræ flav. ʒi *read* ceræ flav. ℈i.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. VIII.—FEBRUARY, 1870.

THE SALE AND DISPENSING OF POISONS.

There could be no better illustration of the great liability there is to the violation of the law, from other causes than design, even among those who might be supposed to be most correct in this respect, than cases occurring in connection with the sale of poisons afford. To those who have well studied the subject, there appears to be nothing very difficult or intricate in it, yet we find judges, magistrates, journalists, chemists, and the public, committing remarkable blunders in their attempts to interpret the law. In another article, under the head of "Justices' justice" we have alluded to cases, as reported, in which judicial opinions have been pronounced which do not at all agree with what we conceive to be the right interpretation of the Act of Parliament. The Pharmaceutical Society is the body to whom has been committed the duty of carrying the law into effect, and the Council of this Society are endeavouring, in the interests of the public, to compel a strict compliance with the requirements of the Act, and also, in the interests of their members and all who are authorized to sell poisons, to explain, as clearly as possible, the conditions under which alone they can be legally sold or dispensed. Among the duties imposed on the Council is that of adding to the list of poisons, from time to time, with the sanction of the Privy Council, such articles as in the opinion of the Council ought to be included in "Schedule A," and, in common with the articles originally named there, made subject to the provisions of the Act. When such addition is made notice of it has to be inserted in the 'London Gazette,' and in one month after the publication of the notice the articles referred to become legally "poisons." In our last number we gave an extract from the 'London Gazette' of December 21st, in which notice is given of the addition of several articles to the list of poisons, and this has now become law. Some of the articles thus added belong to part 1, and some to part 2 of the list. This necessarily makes the carrying out of the law a little more complicated, and as misconceptions have been formed in several instances with reference to the regulations to be observed, the Council have endeavoured to make the requirements of the law as clear and explicit as possible by arranging them in a condensed form, so as to facilitate reference, and promote an easy comprehension of the subject. This arrangement of the regulations, which is appended to this article, comprehends such only as relate to the sale by retail, and the dispensing, of poisons.

REGULATIONS REQUIRED BY THE PHARMACY ACT, 1868, TO BE OBSERVED IN SELLING BY RETAIL, AND IN DISPENSING,

POISONS.

All the Articles named or referred to in the appended List, both in Part 1 and Part 2, are POISONS within the meaning of the Pharmacy Act, 1868.

SALE BY RETAIL.

I.—Relating to Part 1 and Part 2 of the List.

It is unlawful to sell any "POISON" by retail, unless the vessel, wrapper, or cover in which it is contained, be distinctly labelled with the *name of the article*, the word "*Poison*," and the *name and address of the seller*. *This applies to all the articles in both Parts of the List.*

II.—Relating to Part 1 only.

It is unlawful to sell, by retail, any poison included in PART 1 of the List, to any person unknown to the seller, unless introduced by some person known to the seller; and on every sale of any such article the seller shall, before delivery, make or cause to be made, an entry in a book to be kept for that purpose, of

1. The date of the sale;
2. The name and address of the purchaser;
3. The name and quantity of the article sold; and
4. The purpose for which it is stated to be required;

to which the signature of the purchaser, and of the person, if any, who introduced him, shall be affixed. *The article must also be labelled with the name of the article, the word "Poison," and the name and address of the seller.*

III.—Relating only to Arsenic and its Preparations.

It is unlawful to sell arsenic or any of its preparations, unless, in addition to all the foregoing regulations, the following provisions of the Arsenic Act be also observed:—

1. That the poison, if colourless, be mixed with soot or indigo, so as to colour it.
2. That the person to whom the poison is sold or delivered be of mature age.
3. That the occupation, as well as the name and address, of the purchaser be entered in the poison-book.
4. That when the purchaser is not known to the seller, and is introduced by some person known to both, this person shall be present as a witness of the transaction, and shall enter his name and address in the poison-book.

DISPENSING.

None of the foregoing regulations apply to any article when forming part of the ingredients of any medicine dispensed by a Registered Chemist and Druggist; but it is necessary, if a medicine contain a poison included in Part 1 or Part 2 of the List, that the ingredients of the medicine, together with the name of the person to whom it is sold or delivered, be entered in a book kept for that purpose (*Prescription-book*), and that the name and address of the seller be attached to the medicine.

LIST OF POISONS WITHIN THE MEANING OF THE ACT.

PART 1.

Not to be sold unless
the purchaser is known to,
or
is introduced by
some person known to,
the seller;
also,
Entry to be made in Poison-book.
of

1. *Date of sale;*
2. *Name and address of purchaser.*
3. *Name and quantity of article.*
4. *Purpose for which it is wanted; attested by signature;*

and

Must be labelled with

1. *Name of article.*
2. *The word "Poison."*
3. *Name and address of seller.*

Arsenic, and its preparations. (*For special regulations see the foregoing.*)

Aconite, and its preparations;

Alkaloids:—All poisonous vegetable alkaloids, and their salts.

Atropine, and its preparations;

Cantharides;

Corrosive Sublimate;

Cyanide of Potassium, and all metallic cyanides and their preparations.

Emetic Tartar;

Ergot of Rye, and its preparations;

Prussic Acid, and its preparations;

Savin, and its oil.

Strychnine, and its preparations.

PART 2.

Must be labelled with

1. *Name of article.*
2. *The word "Poison."*
3. *Name and address of seller.*

Almonds, Essential Oil of (*unless deprived of Prussic Acid*).

Belladonna, and its preparations;

Cantharides, Tincture and all vesicating liquid preparations of;

Chloroform;

Corrosive Sublimate, preparations of;

Morphia, preparations of;

Opium, and its preparations, and preparations of Poppies;

Oxalic Acid;

Precipitate, Red (Red Oxide of Mercury);

Precipitate, White (Ammoniated Mercury);

Vermin Killers. (Every compound containing a "poison," and sold for the destruction of vermin.)

There are other regulations, relating more particularly to the *keeping and dispensing* of poisons, which it is proposed to make obligatory upon those who are authorized to deal with poisons, but these require to be submitted to, and approved by, a general meeting of the Pharmaceutical Society, before they acquire the sanction of law, and that will not take place until the Annual Meeting in May next. The regulations, however, were published in the last number of this Journal, page 383, and although not yet compulsory, it is very desirable that they should be generally adopted and brought into use at as early a period as possible.

If members throughout the country, and placed under different circumstances, would at once adopt such of the regulations as they think best suited to their particular cases, they would be able, when the subject comes to be discussed in May, to give the results of their experiences. It will be observed, on referring to the resolution of the Council, at page 383 in our last issue, that with reference to the keeping of poisons, several systems are named, and it is proposed to be left to the discretion of each individual chemist to determine which of these he will adopt. Some discretion is also proposed to be left to the dispenser, as to the method of distinguishing the bottles containing poisons and medicines intended for external application, from others.

JUSTICES' JUSTICE.

Our readers will recollect a case which occurred some months ago at Worthing, in which a chemist was convicted before the magistrates for an assumed infringement of the Pharmacy Act, in having dispensed a medicine containing prussic acid without attaching a poison-label to it. If that decision was right, we presume that chemists throughout the country are daily breaking the law in a similar way, and incurring the penalty imposed in that case. It certainly was never intended by those who framed the Act, nor we believe by the legislature in passing it, that such a construction should be put upon the words of the 17th section. The conviction of the magistrates has been appealed against, and the case is expected to come on shortly in the Court of Queen's Bench. So perfectly satisfied, however, are the legal advisers of the Society that the decision was wrong, that the Council, in the paper now issued for the guidance of chemists, indicate exactly the same regulation to be adopted in dispensing poisons as was adopted by the Worthing chemist.

In the early part of last month a case occurred at Bolton, in which a man had poisoned himself with laudanum, purchased of a chemist. The laudanum was properly labelled as the Act requires, and the purchaser was cautioned with regard to its use, being told that the dose was 10 or 12 drops. The quantity sold was 6 drachms, the whole of which the purchaser swallowed as soon as he got home. The coroner, in commenting on this case, referred to the 17th section of the Pharmacy Act, which he said made it unlawful to sell preparations of opium without duly entering them in a book, and he further said that this was one of the class of poisons intended not to be sold unless the purchaser or a witness be known to the vendor, and entries made in a book. He recommended the case to the notice of the public prosecutor. Now opium and its preparations are contained in part 2 of schedule A, and it is perfectly clear that in selling such poisons it is only necessary that they should be labelled with the name of the article, the word poison, and the name and address of the seller. We strongly recommend the use of labels for poisons containing on the same label all the information required by law to be attached to the article; thus—

LAUDANUM.

POISON.

W. SMITH, CHEMIST, BOLTON.

We observe in a letter by Mr. Halliday, an extract from which we have given elsewhere, that, at an inquest since held in the same town, syrup of squills has been declared a poison.

Another case which serves to show the difficulty of making even the judges in some of the subordinate courts understand the provisions of the Act, clear as they appear to others, will be found fully reported at page 488, under the head of Oldham County Court. In that case much unnecessary trouble and expense have been caused by the refusal of the judge to proceed with a case upon what we understand was a very uncalled-for objection.

Again, we have a letter in this month's Journal, from a member, Mr. Edward Davies, who states that he has been convicted by a magistrate, and fined, for selling a packet of "Clift's Vermin Killer" on the 19th of November last, without registering the same and labelling the packet with the name and address of the seller. As vermin killers were not, at the date referred to, included under that name, among poisons, in either part of schedule A, but have since been added, and as a chemist has no means of knowing whether a preparation of that kind, which he has not prepared, and the composition of which is kept secret, really contains a scheduled poison or not, unless he were to submit it to analysis, it seems unjust to enforce a penalty under circumstances such as those described. We think the decision was wrong, but as there may be some doubt with reference to it, and as this class of poisons are now included with those contained in part 2 of schedule A, so as to remove such doubt for the future, it can hardly be considered of sufficient importance to call for further interference.

THE MEDICINE STAMP AND LICENCE.

We have received a great number of communications on this subject, from which it appears that whilst at the Council Meeting on the 12th of December, only a very small majority of those present voted for the proposed abolition of the stamp and licence, a great preponderance of opinion is entertained in the opposite direction among the members of the Society both in town and country. There is strong evidence of this in the fact that all the communications sent for insertion in our pages contain objections to the contemplated change, and as some of these come from men who have had considerable experience in the sale of Patent Medicines, we have no doubt the opinions thus expressed will exercise an influence on members of the Council. We believe that with reference to the objects contemplated, and which the advocates of the abolition of stamp and licence think likely to be promoted by that means, there would be a very general agreement among the members of our body that such objects are desirable. The discouragement of quackery and the removal of an impediment to the full and fair operation of the law for regulating the sale of poisons, are objects advocated alike by those who have taken part on either side of the question. The difference, as far as we can gather, relates to the probable influence which the withdrawal of the implied sanction and authority given by the Government stamp would produce on the sale of quack medicines. Those who advocate the abolition of the present system, do so under the impression that by these means the use of proprietary medicines would be made to depend more upon their intrinsic merits, while those who oppose the change consider that the stamp and licence, being practically taxes on such medicines, act as a check, the only existing check, to their extension and more general diffusion among the public, especially the less informed part of the public. We believe that many of those who have supported the proposition for taking away the tax, would promote the imposition of some equal or more efficacious check, if such could be devised, of an unobjectionable character. We have heard it suggested that in the place of the stamp and licence, there should be a system of registration of proprietary medicines, such as exist in some places abroad, but it is very doubtful whether this change would be beneficial. We know what the evils of the existing system are, we know also that in France, where registration has been adopted, quackery exists to an immense extent; and until some method is proposed which offers a reasonable prospect of removing the evils we have without substituting others that may be more serious, wisdom would seem to indicate a suspension of active interference in the matter.

THE LAW AFFECTING THE STORAGE AND SALE OF PETROLEUM, INCLUDING BENZINE COLLAS, ETC.

We alluded to this subject in our last number for the purpose of putting chemists on their guard with reference to the liability they incur to a penalty for keeping and selling benzine or other volatile hydrocarbon oil, such as is included under the term "petroleum" in recent Acts of Parliament, without having a licence and otherwise complying with the requirements of the law. The Government promised to introduce, and did introduce, a Bill last Session, to amend the Petroleum Acts, so as to relieve chemists from the difficulty in which they were placed in selling small quantities of benzine, but the Bill was not passed, having with many others been withdrawn towards the end of the Session. It was understood that it would be reintroduced in a modified form as soon as Government could give the requisite attention to the subject, and as several penalties have recently been inflicted for infringement of the existing law, the Council of the Pharmaceutical Society have applied to the Government to know what they propose doing in this matter. The following letter has been received from the Secretary of State's office in answer to a communication from Mr. Bremridge, the Secretary to the Pharmaceutical Society:—

(Copy.)

"*Whitehall*, 15*th January*, 1870.

"Sir,—I am directed by Mr. Secretary Bruce to acknowledge the receipt of your letter of the 18th instant, inquiring on behalf of the Council of the Pharmaceutical Society, whether it is the intention of Government to introduce any such measure with reference to the sale of petroleum, as will indemnify chemists from being fined for selling small bottles of benzine collas, etc.; and, I am to inform you that no resolution upon the subject has yet been formed, the question of its introduction having to be considered in common with many other subjects pressing for legislation; its claims will, however, be carefully considered.

"I am Sir, your obedient servant,
"(Signed) S. F. O. LIDDELL.

"*To Elias Bremridge, Esq., Secretary to the Pharmaceutical Society.*"

THE TAX ON ARMORIAL BEARINGS.

The slight alarm caused by the notices which appeared in the public journals, this included, about a month ago, to the effect that Government were about to impose the tax for armorial bearings upon all those who used such or any similar emblems, in whatever way they might be employed, has led to considerable correspondence on the subject; and we are glad to be able now to state that either the notices alluded to, which appear to have originated with officers of the Excise, were unwarranted by any serious intention of the Government, or that the latter have relented on observing the excitement occasioned by the announcement of such intention.

The following statement is contained in a letter which has been received from the Board of Inland Revenue by Mr. Davids, of Cardigan:—

"The Board do not insist upon payment of duty for armorial bearings, or devices in the nature of armorial bearings, used by any person in trade in connection with matters relating merely to his trade,—as, for instance, on bill-heads, trade labels, etc.; but any trader who uses armorial bearings, or such devices, on paper for general correspondence, or otherwise than in connection with trade as aforesaid, must pay the duty."

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *January 5th*, 1870,

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

MR. HASELDEN, VICE-PRESIDENT.

Present—Messrs. Abraham, Bottle, Bourdas, Carteighe, Dymond, Edwards, Hills, Morson, Savage, Squire, Stoddart, and Williams.

The minutes of the last meeting were read and confirmed.

The Report of the Finance and House Committee was presented, showing on the General Fund Account a balance in the Treasurer's hands of £950. 8*s*. 1*d*., and on the Benevolent Fund Account a balance of £421. 15*s*. 4*d*.; and submitting for payment accounts, and various items, amounting to £965. 18*s*. 4*d*.

Resolved—That the Report be received and adopted, and payments made.

Messrs. Taylor and Co.'s estimate for printing the Calendar for 1870 was accepted.

The House and Finance Committee further reported that they had examined the applications and testimonials for the office of Collector, and had recommended the names of three persons for the consideration of the Council. Ballot having been taken, the President declared Mr. Lancelot Steele Hughes elected.

The Secretary reported that he had submitted to the Privy Council for their approval, the resolution passed at the last meeting of this Council, Dec. 1st, in reference to the addition to the schedule of poisons, and that he had received the following reply:—

"Medical Department of the Privy Council, 16th Dec., 1869.

"Sir,—In answer to your letter of the 6th instant, submitting, for the approval of the Lords of Her Majesty's Council, a resolution, passed at a meeting of the Council of the Pharmaceutical Society on the 1st instant, declaring, in accordance with section 2 of the Pharmacy Act, 1868, that certain articles therein named ought to be deemed poisons within the meaning of the Act, I am now directed by their Lordships to inform you that they approve the resolution.

"I am, Sir, your obedient servant,

"To the Secretary of the Pharmaceutical Society. JOHN SIMON."

The Secretary further reported that the said resolution and approval had been put in legal form, and had been advertised in the 'London Gazette' of Tuesday, 21st December, 1869.

It was moved by Mr. Abraham, seconded by Mr. Savage,

Resolved—That the Parliamentary Committee be requested to draw up in a tabular form, the laws regulating the sale of poisons, with a view to their being printed and circulated.

On the report of the Special Committee, with reference to the practice of pharmacy in Ireland, it was

Resolved—That it is desirable that Pharmaceutical Chemists should be entitled to practise pharmacy in Ireland.

The Report of the Library, Museum, and Laboratory Committee was read and received.

Tenders for certain works required to be done in providing extra accommodation connected with the Secretary's office were received and considered;

Resolved—That Messrs. Patman and Fotheringham's estimate be accepted, and that they be authorized to proceed with the work forthwith.

THE REGISTRAR REPORTED AS FOLLOWS:—

Members, being Pharmaceutical Chemists.

Number of Members on Dec. 31, 1868	1739
„ restored in 1869	38
„ elected „	88
	1865
Deaths, seceders, etc.:— Deaths (41); Retired (out of business) (15); Resigned (still in business) (4); Medical (4); Not to be found (1); on Benevolent Fund (2); Defaulters (15)	82
	1783

Members, being Chemists and Druggists.

Number of Members elected in 1869 (first year)	403
Total number of Members (subscribing) Dec. 31, 1869	2186

Associates in Business.

22.

Associates—Major and Minor.

1869.	1868.	Increase.
289	177	112

Apprentices.

1869.	1868.	Increase.
499	280	219

The Board of Examiners for England and Wales reported that they had during the month of December examined—

5	candidates Major, and passed	4
14	„ Minor, „	6
105	„ Preliminary „	66
124		76

And that three certificates of other examining bodies had been accepted in lieu of the Preliminary Examinaton.

Resolved—That the following being on the Register of Chemists and Druggists, be elected—

MEMBERS.

Allen, Joseph, Haverstock Hill, London.
Bancks, Alfred, Stokesley.
Blatchley, Thomas, Yeadon.
Brady, Bedford Foster, Birmingham.
Bullus, Benjamin, Birmingham.
Critten, Robert Pierson, Southwold.
Greeenshields, H. D., 48, Sandringham Road, Dalston, London.
Heap, William, Wilmslow.
Hollingsworth, James, Hull.
Hudson, Robert Thackery, 102, Lothian Road, North Brixton, London.
James, John Browne, Truro.
Langley, Stephen, Chepstow.
Leete, William Waples, Manchester.
Margetson, James, Bristol.
Maunder, Robert, Manchester.
Moses, William Russell, Wolverhampton.
Myers, George, Hull.
Newton, Joel William, Salisbury.
Shaw, Ward, Hull.
Sindall, John William, Knaresborough.
Smith, Frederick Warren, 126, Newington Causeway, London.
Staning, William, Hull.
Stringer, Alfred, Ledbury.
Trix, Alfred John, Colney Hatch.
Warhurst, William Thomas, Liverpool.

Resolved,—That the following Pharmaceutical Chemists be elected Members of the Society:—

Bailey, Richard, Salisbury.
Balkwill, George, Plymouth.
Buckett, Alfred Henry, Penzance.
Cheetham, William Henry, Brixton.
Chilwell, Joseph, Coventry.
Coates, Alfred, Bakewell.
Cocks, John Walter, Torquay.
Cole, Alfred Cooper, Lee.
Duncan, William, Grantown.
Frith, Edwin John, London.
Goodson, Jabez, Alton.
Gratte, Henry Joshua, Newport, Mon.
Hathaway, Frederick Henry, Lydney.
Johnson, Thomas Simister, Manchester.
Lamb, Thomas Campling, Chatham.
Mabbett, George Drew, Colnbrook.
Marsden, Thomas Bingley, Manchester.
Merrikin, John Bilby, Bath.
Mumbray, Henry George, Manchester.
North, George Taylor, London.
Pears, Kilby, Brighton.
Penrose, Arthur Petch, London.
Phillips, William Tye, Lower Norwood.
Postans, Arthur William, Dublin.
Reade, Oswald Alan, Belfast.
Robinson, Alfred Francis, Darlington.
Spear, Robert, Sheffield.
Sumners, Michael Cole, Heckington.
Walton, Ralph, Exeter.
Warrior, Charles, Northallerton.
Wheeler, James, Southend.
Young, John, Elgin.

Resolved—That the following, being duly registered as Pharmaceutical Chemists, be severally granted a Diploma, stamped with the seal of the Society:—

Penrose, Arthur Petch.
Procter, Samuel James, Malvern.
Sequeira, Eduardo Candido, Rio Grande do Sul.
Southwell, Charles Henry, Boston.

Resolved—That the following having passed the Modified Examination, be elected as "Associates in business":—

Armitt, Arthur, Northampton.
Cutting, John Charles, London.
Jones, John, Carnarvon.
Pierson, Clement, Sheffield.

Resolved—That the following having passed their respective Examinations, be elected Associates of the Society:—

Baldwin, Frederick George, Greenwich.
Bateman, John Montague, Canterbury.
Coldwell, David B., Worthing.
Curtis, Charles, Melbourne.
Dinnis, John, Brighton.
Fletcher, Ashby B., Totton.
Fowler, Philip Henry, Bacup.
Goodall, John Edward, Derby.
Hodgkinson, George A., London.
Jarvis, John Swinton, Lee.
Jessop, Josiah Henry, Bristol.
Orton, William Billing, Manchester.
Peacock, George, London.
Perks, Edward O., Hitchin.
Sanders, Thomas, Banbury.
Saunders, Ernest Clement, Bury St. Edmunds.
Smith, John Barker, Dulwich.
Sowray, Joseph, New Malton.
Spencer, Thomas, Osbournby.
Sutcliffe, William Henry, Jersey.

EXAMINATIONS IN LONDON.

January 7th, 1870.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, Ince, and Southall.

Dr. Greenhow was present on behalf of the Privy Council.

MODIFIED EXAMINATION.

Forty-seven candidates were examined; the following thirty-seven passed, and were duly registered as

CHEMISTS AND DRUGGISTS.

Austen, Walter Crees, Honiton.
Baines, John Joseph, Preston.
Bell, Matthew Whitelock, Hull.
Bentley, John Nuttall, Crosshill.
Blissett, William, Romsey.
Brown, Robert Ebenezer, Alvechurch.
Catterns, Heneage Parker, London.
Devereux, Frederic Edward, Worcester.
Dobinson, Thomas, London.
Ellcome, George Henry, Midhurst.
Fields, Cotnam, Birmingham.
Fowls, Jabez, Birkenhead.
Fry, William Cattle, Cheltenham.
Gamble, Henry Arthur, Southampton.
Hancock, Edward Newton, Exeter.
Heathcote, Edward Gilbert, Bradford.
Hicks, William, London.
Hiscock, Richard, Coventry.
Manning, Henry, Fairford.
Miller, Arthur Ingleby, Chester.
Millidge, Alfred, Newport, I.W.
Murphy, John, London.
Pettman, Richard, Folkestone.
Pointon, George, Birmingham.
Poole, Thomas Leighton, Stretford.
Pryce, Alfred Clement, London.
Rees, David, Llanidloes.
Roberts, Theophilus Jones, Holyhead.
Roebuck, George, London.
Schofield, George Taylor, Peterborough.
Scott, James, Exeter.
Simons, David, Liverpool.
Slack, Josiah William, Prescot.
Sowrey, James, Manchester.
Swain, James, New Wandsworth.
Tyson, John, Nottingham.
Wynne, Edward Price, Leominster.

January 19th, 1870.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Gale, Garle, Haselden, and Ince.

Dr. Greenhow was present on behalf of the Privy Council.

Twenty candidates were examined; the following eighteen passed, and were duly registered:—

MAJOR (as Pharmaceutical Chemists).

*Rimmington, Felix W. E., Bradford, Yorks.
*Holmes, Jasper Clement, Southampton.
*Hills, Walter, Ryde.
Brown, Joseph Frederick, Frome.
Swire, Jabez, Skipton.
Bilney, Joseph Thomas, London.

MINOR (as Chemists and Druggists).

†Cadman, Daniel Charles, London.
†Maitland, John Edward, London.
†James, George, Haverfordwest.
†Barrett, Frederic John, Fakenham.
Brown, Frederic Peter, Grantham.
Davies, Robert Higgins, Dartford.
Best, Thomas Fütcher, Bath.
Foottit, Charles Miller, Marlow.
Longley, John William, Bradford, Yorks.
Raffle, William, South Shields.
Adams, Frank, Stoke-on-Trent.
Sanders, Thomas Scholes, Manchester.

The above names are arranged in order of merit.

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* Passed with honours; eligible, at the end of the Session, to compete for the Pereira Medal.

† Passed with honours; eligible, at the end of the Session, to compete for the Prize of Books.

EXAMINATION IN EDINBURGH.

January 11*th*, 1870.

Present—Messrs. Ainslie, Aitken, Buchanan, Evans, Kemp, Mackay, and Young. Eighteen candidates were examined; the following eleven passed:—

MAJOR (registered as a Pharmaceutical Chemist).

Robertson, William, Elgin.

MINOR (registered as a Chemist and Druggist).

Dunn, John, Aberdeen.

MODIFIED (registered as Chemists and Druggists).

Gemmell, Hugh, Ayr.
Grieve, John Bodden, Maxwelltown.
Guthrie, Andrew, Liverpool.
Hitchin, Robert, Bradford, Yorks.
Kennedy, Patrick Maclean, Glasgow.
Stevenson, James Muir, Ardrishaig.

PRELIMINARY (registered as Apprentices or Students).

Glegg, John, Edinburgh.
Shearer, John, Wick.
Veitch, John Wilson, Dunse.

PHARMACEUTICAL MEETING.

Wednesday, January 5*th*, 1870.

MR. A. F. HASELDEN, VICE-PRESIDENT, IN THE CHAIR.

The Minutes of the previous Meeting having been read, the following

DONATIONS TO THE LIBRARY AND MUSEUM

were announced, and the thanks of the Meeting given to the respective donors thereof:—

Medico-Chirurgical Transactions, vol. lii.: from the Royal Medical and Chirurgical Society,—Lettsom's Natural History of the Tea-tree: from Mr. D. Hanbury,—Gommes-Résines des Ombellifères; Rapport sur l'Exposition des Produits de Pêche de la Haye en 1867: from Dr. J. L. Soubeiran,—Catechism of the Decimal Albert and Metric Systems of Weights, Measures, and Coins: from Professor Bonn.

NOTES ON THE PHARMACOPŒIA.

BY PROFESSOR REDWOOD.

The CHAIRMAN said the first business of the evening would be to discuss the paper read at the previous meeting by Dr. Redwood, on the British Pharmacopœia, and he would, therefore, call on the Professor to make some remarks, for the purpose of introducing the subject.

Dr. REDWOOD did not think it could be necessary for him to say anything to impress the members present with the importance and interest of the subject, but he might be allowed to remind them of the circumstances under which it was now brought before them for discussion. On previous occasions, when similar subjects had been introduced there, he had been under some restraint in alluding to what had been done by the Pharmacopœia Committee of the Medical Council, fearing that he might say more than he would be considered justified in communicating, although, at the same time, he felt that by referring to the proceedings of the Committee information might be given which would enable them more easily to arrive at satisfactory conclusions. At the last meeting of the Medical Council, however, the Committee had removed any such restraint, by not only sanctioning the publication of the reports, but even expressing a desire that the subject-matter of them should be submitted for discussion to the members of that Society. They were anxious that this and all matter relating to the Pharmacopœia should be fully and freely discussed there, feeling, as they did, not only that great benefit had already been derived from the hints and suggestions given by practical pharmaceutists, but also that it was from the same source that they must obtain the most valuable information, such as would enable them to make the Pharmacopœia the means of realizing all that was contemplated in its production. Under these circumstances, therefore, the subject was now submitted to them for discussion. There could be no doubt of its importance, but he wished also to refer to what he considered to be the great responsibility which rested on them, with reference to the manner in which they dealt with the subject. He felt certain that it would be treated in that spirit which would not only tend to the elucidation of truth, but would do this in such a manner as not unduly to weaken the authority of the Pharmacopœia. They owed allegiance to this important work, and must be loyal to it, even although there were little matters on which differences of opinion existed. With reference to a work of this description, there must necessarily be differences of opinion on many points, but it was not desirable to magnify such differences, so as to cause the instructions given to be deviated from without sufficient cause. In approaching the subject on the present occasion it appeared to him desirable to look first at the broad and general features of the work, at the substances described, and the manner in which they were described, at the processes for the production of medicines, and the characters referred to in the products. The question was, could they agree among themselves as to the desirability of making any alterations in the matter of the work as it now existed, so as to render it more useful for the purposes for which it was intended. They did not come there to squabble about little minute matters and differences of opinion, such as must inevitably exist. He might remind them that before the Pharmacopœia was published, copies of it were sent not only to all the members of the Medical Council, but to many practical pharmaceutists, whose opinions had been asked with reference to the details, and a great variety of opinions had been expressed, which differed on many points. It had been the duty of the Committee to weigh the importance of the opinions thus expressed, and to meet the objections urged in the best way they could. He could not conceive it possible, with a work of this description, to make it satisfy all those for whose use it was intended, but it was their duty to bring it as near to perfection as possible. An appeal was now made to the members of this Society as practical men, and they were invited to express their opinions and give the results of their experience on any of the points to which allusion had been made. He hoped that what was advanced would have reference, not to change for the mere sake of change, but to such as was really required, bearing in mind that all unnecessary changes were objectionable. It was desirable also, he thought, not to encumber the Pharmacopœia with too many details, but to make the descriptions, as far as they went, complete and intelligible. Some persons seemed to fancy that all the minutest details relating to processes ought to be given, so as to leave nothing to the skill and judgment of the operator; and, again, that the tests indicated should be capable of detecting every possible impurity. It was obvious that such details would make the work too cumbrous. What was intended and expected was that those who used the Pharmacopœia should exercise a rational intelligence, with a certain amount of previously-acquired knowledge, which they were bound to apply in carrying out its instructions. They must look to the spirit of the instructions given, and consider what was the object contemplated, and what was aimed at and desired to be obtained in the product, not what it was possible to introduce or leave there without its being detected by the means given. He believed he was not claiming too much for the present Pharmacopœia when he said, that no work of a similar description had been produced that was more full and explicit in the descriptions of processes for the production, identification, and testing of medicines, yet there were some who failed to find all they wanted in these respects. He had been sometimes almost ready to conclude that the error lay in the other direction, and that those who had to carry out the Pharmacopœia were led to rely too much upon the instructions they found there, and too little upon their own resources. The object they had on the present occasion, however, was to draw forth the expression of opinion on these various points, and to obtain as much practical information as possible with reference to any of the details of the Pharmacopœia.

The CHAIRMAN said he would defer any observations of his own until a subsequent occasion, and would be glad to hear any remarks on the important subject before them.

Dr. REDWOOD said he had received a communication on one of the subjects referred to in his paper, which he thought it might be convenient to have read before proceeding with the discussion. It was as follows:—

LINIMENTUM POTASSII IODIDI CUM SAPONE.

BY MR. J. BORLAND.

The formula for this liniment appears for the first time in the British Pharmacopœia of 1867, and, judging from the definite but simple directions given for its preparation, it might be inferred that, if these were strictly followed, a uniform product would at all times be readily obtained.

That such is not the case, however, may be gathered from several notices and remarks which have appeared in this Journal at different times,* the most recent of which is that by Professor Redwood in the number for December last, wherein he says that some alteration in the directions for preparing this liniment appears to be called for.

The necessity of having some alteration made in the formula is also referred to by Mr. Squire, in the seventh edition of his 'Companion to the British Pharmacopœia.' After quoting the authorized formula, he remarks, "That the directions for making this preparation have been insufficient, and caused a good deal of perplexity and loss to pharmaceutists, is pretty well known, and has called forth an amended formula in the 'Pharmaceutical Journal,' April, 1868. This amended formula, however, in the hands of many, has failed to give generally satisfactory results;" and, in a note appended to it, he states that the Castile soap, branded "Émile Vincent" and "Honore Arvenon" are those which answer the purpose. But, from experience, it is found that even these brands of soap do not at all times yield a product having the gelatinous condition which it seems the liniment ought to have. Nor is it to be expected that any manufacturer of soap should on all occasions be able to send out a soap having the same uniform relative proportion of its chemical constituents. The olive oil of one season will differ from that of another in the proportions of oleate and palmitate of glycerine which they respectively contain, and consequently the soaps made from them will also vary in the proportion of oleates and palmitates which they contain. It is this variation, I believe, which has led to the numerous difficulties experienced in compounding this liniment.

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* *Vide* Pharm. Journ., pp. 26 and 35, July, 1869.

It is unfortunate, too, that the compilers of the Pharmacopœia did not state that the product of the formula should have the consistency of a jelly, as this trifling omission, I am aware, has led to an epistolary warfare between two of our body, who each had received the same prescription to dispense containing the liniment in question.

Both compounded it strictly in accordance with the Pharmacopœia, and both differed in their product. The one, *accidentally* employing a suitable soap, hit upon the right consistency; the other, using a different soap, that of the Pharmacopœia, dispensed it having no tendency to gelatinize, and consequently was called in question. Had the Pharmacopœia been definite on the point of consistency, the liquid liniment would never have been dispensed at all.

The admirable researches of Mr. Deane ('Pharmaceutical Journal,' vol. xviii. o.s., page 461), on the making of soap liniment, have placed it in our power to prepare a liniment which will at all times gelatinize, and continue so for a very long time, and that, too, without having recourse to the employment of soft soap, or any other foreign to the Pharmacopœia. According to Mr. Deane, hard soap contains a very considerable proportion of palmitate of soda, which is nearly insoluble in alcohol under a temperature of 60° or 70° F.; and this palmitate, when dissolved in alcohol at a temperature above that named, invariably yields a product having a jelly-like consistency.

This fact enables me to propose to the Society a slight alteration in the formula which, so far as I have tried it, obviates every difficulty.

Instead of using 1½ oz. of hard soap, I only use 1 oz., and for the other half-ounce I employ a corresponding weight of the impure palmitate of soda left from making linimentum saponis. By keeping this substance for some time the smell of camphor and rosemary departs, and when it is used in the proportion named, the directions of the Pharmacopœia being in other respects closely followed, the liniment has an opaque gelatinous consistency, and remains so for several months. I have a sample past me which was made in June last, and it is still good, and only showing a tendency to liquefy at the sides of the vessel in which it is kept.

Although the liniment in question is not much employed by medical men here, yet this suggestion may enable many to economize a substance for which no use was previously found, and give the opportunity for further researches on this residuary product, for which I am confident other pharmaceutical appliances will ere long be found.

Kilmarnock, January 4th, 1870.

Dr. Redwood said the communication of Mr. Borland seemed to contemplate that the difficulty experienced had been in getting a firm, opaque, gelatinous liniment; whereas he had always understood that the difficulty lay in the other direction,—that there was no difficulty in getting a liniment of that description, although certainly there was sometimes a little tendency to separate. But the difficulty generally was to get that semi-transparent gelatinous liniment which more nearly resembled Steers' Opodeldoc.

The Chairman said there was, no doubt, a difficulty in producing the opaque kind of liniment at all times. He had seen experiments tried by several hands with the same materials, following the same directions, and yet the result produced was not the same. The liniment would remain tolerably firm and opaque for some time, and then all at once it would separate. He had not yet tried the use of soft soap, but he expected that it would produce a clear liniment, and would be more permanent.

The following communications were then made on subjects referred to in Dr. Redwood's paper:—

ON LIQUOR MAGNESIÆ CARBONATIS.

BY C. UMNEY, F.C.S.

At the last meeting of this Society, its members were invited by the President to discuss certain amendments then proposed by Professor Redwood, to be made to various processes and formulæ of the British Pharmacopœia, prior to the publication of the next edition.

It must have been most gratifying to those present, to have received the thanks of their Professor, on behalf of himself and the Medical Council, for the great help which he acknowledged had been rendered to them when compiling the Pharmacopœia, not only by individual members of the Society, but by the results of the discussions that have from time to time taken place within these walls.

In commencing this evening's discussion, it is undoubtedly out of order not to take the subjects as they were enumerated, and as they appear in the present Journal; as some of these, however, have been previously discussed, it will be excusable to depart from the accustomed rule, and take a subject which, to my knowledge, has been little commented upon here.

In making various experiments, in connection with the manufacture of *Liq. Magnesiæ Carbonatis*, shortly after its introduction into the Pharmacopœia, I was induced to examine the fluid magnesias of pharmacy, of professedly B. P. strength; the results obtained showed that the strongest were about *two-thirds*, and the weakest but *one-third* the strength, of the officinal solution.

On a large scale, I found, I could with ease produce a solution that would, when filtered, and with carbonic acid in excess, retain an equivalent of at least 5 grains of calcined magnesia in the fluid ounce, the minimum quantity indicated by the British Pharmacopœia in its "characters and tests" for Liq. Magn. Carb., a quantity which would have been expressed with more accurate comparison, when stating the equivalent of carbonate present, as nearly 12 grains (11·93) instead of 13 grains in the fluid ounce.

But with this solution I found, unless the greatest precautions were taken to ensure considerable excess of carbonic acid, being retained in the vessels in which it was stored, and that even under slight pressure, considerable quantities of the terhydrous carbonate of magnesia would always be precipitated. The determination to strictly adhere to the Pharmacopœia, I must confess in this case, resulted in disappointment and often vexation, for after the magnesia solution had been supplied to pharmacists but a short time, complaints reached me that the fluid was so nauseous that children refused to take it, and that it would not keep as well as the solution supplied on former occasions before the formula was given in the Pharmacopœia.

The substance of the explanation generally offered was, that the compilers of the Pharmacopœia, in their wish to make a preparation of almost the greatest saturation, in order to increase its activity, had exceeded the strength at which such solution could advantageously be presented as a commercial article; and to its excessive strength alone was the nauseous taste, and its liability to deterioration due, and not to a defect in manufacture.

The suggestion therefore of Professor Redwood, that the solution should be decreased in strength to 10 grs. carbonate to 1 fl. oz. will, I am sure, be gladly received by the manufacturer and pharmacist, and doubtless most willingly adopted by the profession.

It is to be feared, however, that this strength will rarely be attained in commerce, if one may give an opinion from the solutions of town and country manufacturers obtained in December last (a table of which I have appended), for, with the high standard of the present Pharmacopœia, but half of these approached even the proposed amended strength, and when this latter is the officinal one, perhaps those solutions which are now so inferior, will dwindle down to something still less.

The facility, however, with which this amended solution can be made, and its much less liability to change (when kept with the proper precautions), will leave little room for excuse in supplying the dilute solutions commented upon.

While this subject is under discussion I should suggest that, in future, the directions for the preparation of this solution be somewhat modified; and, in doing so, it must not be thought that I for one moment hold the opinion that a pharmacopœia should be an elaborate text-book for a manufacturer, but for the reason that it would be advisable, in all cases where processes are given, that a pharmacist's attempt should, without several experiments, result in an approximation to that perfection intended by the compilers.

The phrase "*pass into it* (*i. e.* the magnesia apparatus) *pure washed carbonic acid*" would, I think, be better rendered as *force into it*, and for this reason:—For the gas to pass freely (other than by diffusion) the pressure in the gas-holder must be greater than that in the cylinder in which the solution of the precipitated carbonate is to be effected, and the pressure in the generator greater than that in the gas-holder. Such an arrangement would be unnecessarily expensive and inconvenient.

It is customary to introduce the gas into the cylinder by means of a force pump, and there retain it under pressure by a check-valve. The word "*force*," therefore, to my mind, would give a more complete idea of this part of the process than the word "*pass*."

I would also suggest that, after the phrase "*retained there under pressure*," the words of "*about three atmospheres*" be inserted; in fact, directions similar to those given in the Pharmacopœia for lithia and soda waters.

This point is important, inasmuch as the quantity of magnesia dissolved under various pressures differs considerably. For instance, that made with the officinal proportions, under a pressure of one atmosphere, will contain about five grains of carbonate to the fluid ounce; while that made under greater pressure will contain nearly the whole of the carbonate of magnesia (16·9 grs. to the fluid ounce) produced from the sulphate ordered, as the table appended will show. This addition would, I think, be more likely to ensure uniformity of the fluid when it reached the hands of the public.

In conclusion, I would remark that the twenty-four hours' contact with carbonic acid is by no means necessary, although undoubtedly the most economical for the production of a solution of the B. P. strength, for it can be accomplished in as many minutes if the pressure be increased to fifteen or twenty atmospheres, and the directions of the Pharmacopœia somewhat modified.

Fluid Magnesias of Pharmacy, December, 1869.

		Calcined Magnesia,* MgO.	Carb. of Magnesia ($(MgCO_3)_3 MgO, 5H_2O$).
No. 1	1 fl. oz.	2·4	5·7
" 2	"	4·4	10·5
" 3	"	3·7	8·8
" 4	"	4·0	9·5
" 5	"	2·1	5·0
" 6	"	4·4	10·5
" 7	"	2·7	6·4

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* 2·387, factor to convert MgO into ($MgCO_3$ MgO, $5 H_2O$).

Quantities of Magnesia dissolved in twenty-four hours, with the B. P. proportions under various pressures.

Atmospheres.		MgO.	$(MgCO_3)_3 MgO, 5H_2O$).
1	1 fl. oz.	2·1 grs.	5·01 grs.
2	"	3·6 "	8·59 "
3	"	4·6 "	10·98 "
4	"	5·4 "	12·88 "
5	"	6·2 "	14·79 "
6	"	6·5 "	15·51 "
7	"	6·6 "	15·75 "
8	"	6·7 "	15·99 "
9	"	7·05 "	16·82 "
10	"	6·85 "	16·35 "
15	"	6·7 "	15·99 "
20	"	6·5 "	15·51 "

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TABLE OF STRENGTH OF TRADE SPECIMENS OF "FLUID MAGNESIA."

BY PROFESSOR ATTFIELD.

While recently endeavouring, with Mr. Moss, then Bell Scholar, now Junior Assistant in the Laboratory of the Pharmaceutical Society, to ascertain whether or not there existed a class of carbonates corresponding to the super-salts of the oxalic series,—compounds bearing the same relation to the acid carbonates that salt of sorrel does to acid oxalate of potassium,—I had

Table of Strength of Seven Trade Specimens of "Fluid Magnesia."

	Grains of Magnesia yielded by 1 fl. oz. $MgO = 40$.			Grains of Official Carbonate per fl. oz. ($3MgCO_3$, $Mg2HO,4H_2O$) Divided by $4 = 95·5$.			Grains of Pure Carbonate of Magnesium in 1 fl. oz. $MgCO_3, 3H_2O = 138$.		
	Dissolved.	Deposited.	Total.	solved	Deposited.	Total.	Dissolved.	Deposited.	Total.
No. 1	2·29		2·29	5·48		5·48	7·92		7·92
2	3·81		3·81	9·09		9·09	13·14		13·14
3	1·77	·07	1·84	4·23	·16	4·39	6·11	·23	6·34
4	2·22		2·22	5·30		5·30	7·65		7·65
5	3·51	·84	4·35	8·38	2·00	10·38	12·11	2·90	15·01
6	5·23	·35	5·58	12·48	·83	13·31	18·03	1·19	19·22
7	3·88	·14	4·02	9·26	·34	9·6	13·38	·5	13·88
The official strength = "not less than"	5·00		5·00	11·94		11·94	17·25		17·25
But should be "about"	5·50		5·50	13·00		13·00	18·98		18·98
Proposed strength	4·20		4·20	10·00		10·00	14·45		14·45
" "	3·35		3·35	8·00		8·00	11·56		11·56

occasion to examine various samples of the "fluid magnesia" of pharmacy. The results are embodied in the accompanying table. The analyses are now brought under notice, by way of aiding the present discussion respecting the proposed strength of liquor magnesiæ carbonatis of the next British Pharmacopœia.

The official "Solution of Carbonate of Magnesia" is a solution of the salt in distilled water, charged with carbonic acid gas. It is stated to contain "about 13 grains of carbonate of magnesia in a fluid ounce." By "carbonate of magnesia" is evidently intended the ordinary article of the shops, a hydrous mixture of true carbonate and hydrate of magnesium ($3\,MgCO_3, Mg\,2\,HO, 4\,H_2O$). The strength of the Pharmacopœia solution is given also in terms of oxide of magnesium, or magnesia (MgO); thus, "A fluid ounce of it, evaporated to dryness, yields a white solid residue, which, after being calcined, weighs not less than 5 grains." If the solution contain 13 grains of "carbonate" per ounce, the calcined residue will weigh 5½ grains. Speaking exactly, we may say that the official liquor, if of full strength, contains, in 1 fluid ounce, 19 grains, or not less than 17¼ grains, of pure trihydrous carbonate of magnesium ($MgCO_3, 3\,H_2O$)—for this is the salt which crystallizes from the solution by spontaneous evaporation at any ordinary temperature. .

The table shows the strength of seven different specimens of "fluid magnesia." They were ordinary trade samples, selected so as to represent the products of the six chief makers of this preparation. The amount of salt dissolved, the amount deposited in crystals in the bottle or jar, and the total amount per fluid ounce, before any deposition occurred, is given for each sample. This information is repeated in three forms; the first indicates the number of grains of oxide of magnesium yielded by 1 fluid ounce; the second gives the amount of official "carbonate of magnesia," from which 1 fluid ounce was prepared; the third shows how many grains of crystalline carbonate of magnesium are contained in 1 fluid ounce. Taking the centre columns we see, that if much more than 9 grains of "carbonate of magnesia" be dissolved in one ounce, a portion of the salt will be deposited, sooner or later, and the medicine thereby be weakened. Specimen No. 3 had also lost a portion of its salt by crystallization, but this was probably due to insufficient treatment with carbonic acid in the first instance, for the bottle was well corked.

The analyses indicate that if liquor magnesiæ carbonatis be made by dissolving 8 grains of "carbonate of magnesia" in 1 fluid ounce of water (by aid of carbonic acid), the product may be expected to be stable. A stronger solution is liable to become weak by deposition of crystals within the containing vessel.

The CHAIRMAN said this subject was one well worthy of consideration, but in his opinion it was just one of those preparations, like effervescing carbonate of soda, which might very well have been omitted from the Pharmacopœia. Although it was desirable that a standard should be fixed, it was not at all likely that pharmaceutists in general would prepare it, as they were not likely to have the convenience for it, and therefore it must be left in the hands of skilled manufacturers. If they could settle the most desirable strength, it might be left in their hands. There was a gentleman present who manufactured it on a large scale, and perhaps he could give them his opinion with respect to it.

Mr. CARTEIGHE (of Messrs. Dinneford and Co.) was of opinion that the alteration proposed by Professor Redwood in the formula for fluid magnesia was in every respect desirable. The amount of carbonate, whether wet or dry, that could be dissolved under pressure was, within certain limits, simple enough. They could dissolve a large quantity of magnesia under a great amount of pressure, but the question of keeping depended on a variety of conditions—upon something more than the mere fact of the volume of carbonic acid present in the solution. Mr. Umney had alluded to the fact that the process was rather long and tedious, and that the same result could be obtained in a shorter space of time. There was no doubt this was so, but at the same time there was something in the keeping properties due to the time during which the carbonate of magnesia was kept in contact with the carbonic acid gas under pressure. He was not prepared to say whether a different compound was actually formed, but there was something more than plain carbonate of magnesia. Carbonate of magnesia which had been agitated for a long time with an excess of gas did really deposit less than a solution which was made quickly. If you forced carbonic acid gas into the solution under a pressure of 90 lb. or 100 lb. to the square inch, you could readily dissolve a large quantity of the carbonate; but it was another question altogether whether you did not get a product very much better by agitating the same quantity of solid carbonate, the same amount of fluid, and the same amount of gas, at a pressure of 30 lb. or 40 lb. to the square inch for a longer time. He was not able to speak with certainty as to which was really the best process; perhaps a modification of the process would be, in some respects, the best. At certain pressures you could get a solution which kept in cold weather very well; but in summer, and in that state of the atmosphere which was commonly called thundery, a remarkable effect was always produced upon this solution. If they had a solution of any given strength, say five grains to the ounce, they might take hundreds of bottles, well and carefully corked, all supersaturated with gas, and leave them for twelve hours during the night, and in the morning they would find perhaps 90 per cent. of them had crystallized and deposited. There was nothing at all to account for this change, for it would happen when the temperature, though it might be warm, was not at all excessive, and yet down would come the carbonate. From his experience he really could not point out any process by which you could prepare fluid magnesia containing even ten grains to the ounce which would keep during all weathers; and he had serious doubts whether it really could be done. Some persons had thought that this effect was due to the action of light, but he had found that even bottles kept in the dark had really deposited the most. He alluded to this to show that this was a preparation which required very constant watching and careful preparation to get it into anything like a proper condition; and when they did send it out in that condition, they could not always undertake to say that at the end of a month it should not change in any respect. As regards the variation in strength, his own experiments, which had been carried on for some years, had corroborated the result which Mr. Umney and Dr. Attfield had communicated. Some specimens were very weak indeed, but he apprehended that some of those examined were really made on a large scale as by-products, and could not have been made specially with a view to use in medicine. The members were probably aware that there was one well-known process for making carbonate of magnesia—the process, in fact, by which most of that used in commerce was made; and in that process fluid magnesia was made as a by-product, contaminated, of course, with iron and a few other things which would occur in the magnesian limestone used in the process. He was charitable enough to suppose that the unfortunate No. 3 in Dr. Attfield's table must have been a specimen from a manufacturer of that sort, and, in doing so, he did not attribute any blame to the manufacturer, for he did not produce the fluid magnesia as a special product for sale as medicine, or as containing so many grains to the ounce. The fact was, it was run off, in the process he had referred to, into large pits, where it was allowed to deposit; and, if any one liked to buy the waste product, of course they were able to do so. He certainly was of opinion that thirteen grains to the ounce was an unfortunate strength, for, though it was quite possible to make it even as high as eighteen or even twenty grains, there would be great difficulty in keeping it. They must bear in mind that fluid magnesia was a preparation taken largely by the public, and was not one which was always ordered in prescriptions with three or four ounces of water. Generally a bottle of it was ordered to be taken; and the public, when using such a preparation, did not think so much of the necessity of putting the cork tightly into the bottle, as a chemist would; and therefore in every respect it was desirable, in his opinion, to have the standard strength not higher than ten grains to the fluid ounce. It could be made at that strength to keep very well the greater part of the year; but, as he had before stated, it required the greatest nicety, and then it was an almost unsolved problem whether it would keep during certain states of the atmosphere.

Mr. **Corder Clayton** said he had made some experiments on this preparation; but with regard to what Mr. Carteighe had said about a by-product, he had made inquiries, and he could not find in any case—and he had been up and down through the kingdom a great deal—that the fluid magnesia came from Newcastle. The bulk of it seemed to come from Jenning's, of Cork, and having examined it, he must say that he found it as near as possible of the Pharmacopœia strength. Almost the first specimen which he had made, he had made too strong, and his customer wrote back to say that when he ordered carbonate of magnesia, he meant it, and did not want a mixture of bicarbonate of potash and sulphate of magnesia, and he triumphantly pointed to a small quantity of sulphuric acid which there was in the solution. He had then examined several specimens of dry carbonate of magnesia, and he found they did contain traces of sulphuric acid in them, and, therefore, all the fluid magnesia made from them was not perfectly free from this acid. He should be glad to know from Professor Redwood whether it were possible to wash recently precipitated carbonate so thoroughly as to remove all trace of sulphuric acid.

Professor Redwood said that not only in reference to that precipitate, but other precipitates obtained under similar circumstances, as, for instance, precipitated oxide of iron, he had repeatedly endeavoured to obtain them free from every trace of sulphuric acid, but he had not been able to do so. He was rather disposed to think with the gentleman who had first spoken, some of the sulphuric acid was retained in the state of a basic insoluble compound, and that that accounted for the great difficulty, if not impossibility, which there was in washing out the whole of the sulphuric acid.

Mr. **Martindale** (of University College Hospital) said he might add one remark with regard to the *Linimentum Potassii Iodidi cum Sapone.* He believed the only improvement required in the Pharmacopœia process was that to the solution of iodide of potassium a small quantity of water should be added previous to the mixture with the solution, and that they should be careful not to allow much evaporation of water. If there were much evaporation, it should be replaced at the end of the process. If it were made in a bottle well corked, and the materials were mixed at equal temperatures, a semi-transparent jelly would be produced; but if they mixed one hot and the other cold, the result would be an opaque jelly. He had noticed that if it were shaken, and it was allowed to become cool, you then got an opaque jelly which was quite natural, because particles of air got mixed up with it, and that accounted in most cases for the opacity which was frequently found. He always used the white Castile soap of commerce, but he had been told it could be made from the ordinary white curd soap, and probably this would be so if precautions were taken as to mixing the ingredients when both were at about equal temperatures.

Mr. **Cartwighe** believed a good deal of misunderstanding had arisen about the meaning of the term jelly in reference to this liniment, for he had always associated the idea of jelly with that which one was accustomed to eat, having a somewhat yellow transparent colour. If this liniment were made with Castile soap, he had never been able to produce anything like that at all, but when made with soft soap, in various proportions, it was quite possible to make a very beautiful imitation of what he should call an edible jelly. It was certain that a great deal depended on the soap, for having made fifty or sixty experiments on this liniment with different kinds of soap at different times, he was astonished to find what different results were obtained with different soaps. Some time ago he met with a specimen of soap which professed to be genuine French Castile soap made with olive oil, and which was guaranteed by the seller to be what it professed to be. That soap yielded an excellent product, but it seemed to go very much further than the ordinary soap, although it was not sensibly harder, for he had dried it a short time and compared the amount of loss with that of an ordinary specimen, and found there was no material difference between the two. Still it seemed to have the sticky tendency in a greater degree than that which he was in the habit of using. He found that following strictly the directions of the Pharmacopœia, cutting this soap up into extremely small pieces, not powdering it, he got a product which did not separate, and was not transparent, but which would bear dilution to a considerable extent; indeed, in one experiment he added as much as three ounces of water beyond the total weight of the ingredients used. He thought it would be well in future to mention the weight which the product should have, as according to the weight there would be very different degrees of limpidity. The specimen of soap he had alluded to, although very excellent for this purpose was totally unfit for making soap-liniment, for when it was dissolved at a low temperature, it became quite gelatinous and unfit for use. The result of the different experiments he had made tended to force conviction upon his mind, that the later recommendation of using soft soap was a very desirable one to introduce, as he thought it would tend to produce a more uniform product, and one more nearly answering the description given. He thought it would be better to use, if not all, at least one half of soft soap in the preparation.

Mr. **Wood** said there was one point in Professor Redwood's paper to which he thought it might be worth while to direct attention, namely, the alteration which he proposed in the Pharmacopœia process for determining the alkaloids in cinchona barks. The process now given was to form an ethereal solution, which was to be evaporated to dryness, and the product taken as representing the weight of alkaloid extracted from the bark. Dr. Redwood proposed to modify this process by directing the ethereal solution to be evaporated, then dissolved in dilute sulphuric acid, and afterwards precipitated by ammonia, the precipitated alkaloid to be collected on a filter, washed, dried, and weighed. It so happened that he had quite recently been engaged in a number of experiments bearing on this very point, and he had come to a different conclusion to that advanced by Dr. Redwood. In fact, he was very strongly inclined to think, that the process as it stood gave more correct results, and was more easily carried out, than the one suggested. He had taken a definite weight of pure quinine, and tried it by both methods; and though he had very little difficulty, by evaporating the ethereal solution in arriving at a constant and correct estimate of the amount of quinine, by the other process he never could obtain perfectly uniform results, nor could he obtain them perfectly accurate. In the first place, there seemed to be a difficulty in precipitating pure quinine by ammonia. The difficulty of precipitating hydrates had been referred to by Dr. Redwood in the case of oxide of iron and carbonate of magnesia, and the same difficulty arose in precipitating the hydrate of quinine. If you took a solution of sulphate of quinine, and added ammonia to it, unless the precipitate were used in large excess, and various precautions taken, the precipitate invariably contained sulphuric acid, a certain proportion of which could not be removed by any amount of washing. If the requisite precautions were taken, viz. to have a solution tolerably dilute, the amount of ammonia tolerably large, and the solution kept quite cool, then you had a very bulky precipitate, which had to be collected on a filter and washed. It must be washed quickly, before it aggregated and contracted, because if it did that before it was washed, there was invariably a portion of the mother liquor included within it in a vesicular state. It was also necessary to use a considerable quantity of water in order to get the hydrate of quinine free from sulphate of ammonia, and this water necessarily dissolved a portion of the hydrate of quinine, and that portion was lost in the estimate. The precipitate was to be dried and weighed, but only that which was insoluble could be so treated; that dissolved in the liquid was lost. That which had to be dried was a hydrate of quinine, or a compound of quinine with three atoms of water. Dry hydrate of quinine was a definite chemical compound, and it could be dried by putting it into a steam or hot-air bath at 212° F. At that temperature you could not drive off the whole of the water of hydration, but only a portion, and that portion seemed a variable one; so that if the precipitate were dried at that temperature and weighed, the result constantly varied in weight. It might be weighed several successive times, and each time there would be a loss, and this process might be continued for a great length of time. It was necessary to heat hydrate of quinine to 250°, in order to drive off the whole water of hydration, and at that temperature it was possible to obtain an anhydrous quinia in a definite condition. He had brought a note of one or two experiments which he had made in this way. In the first place he took 10 grains of common sulphate of quinine, a definite composition (which would contain theoretically 7·43 grains of anhydrous quinia), and treated it by making a solution in sulphuric acid, using all the precautions he had stated, but the total quantity of mother liquor was 5 oz. 10 grs. The precipitate being dried at a temperature of 212°, weighed at the end of the first hour 6·9 grs., at the end of the second hour 6·7 grs., and at the end of the third hour 6·54. There was thus a constant loss going on, and it would be seen that the least weight was nearly 1 gr. below the theoretical quantity of anhydrous quinia, which should have been obtained; and yet it was not really anhydrous at that temperature. By the other method, that given in the Pharmacopœia, the formation of basic sulphates was avoided, and also the difficulty of having any of the quinine left in the mother liquor. In fact, you got the whole of the quinine which could be extracted together, and it only remained to dry it, and get it of a definite weight, and the drying was attended with no greater difficulty than in the case of precipitated quinine; as far as his observation went rather less. He found that with a constant temperature of 212°, he got first 8·26 grs., then at the end of an hour 8·16 grs., and at the end of the third hour it was reduced to 8 grs., at which point it remained tolerably constant, so that it then contained ·57 gr. of water of hydration. If, however, it were exposed to a temperature of 250°, there was very little difficulty in getting in two hours a constant weight approaching, as nearly as possible, the theoretical yield. At the end of the first hour it was 7·6 grs., at the end of the second hour it was 7·5 grs., and at that weight it remained constant. On the whole, therefore, he believed the present process was more easy and certain than that recommended by Dr. Redwood.

Mr. **Bland** said he should like to raise one point as to the question of their responsibility in following out literally the Pharmacopœia. He perfectly agreed with Dr. Redwood that a heavy responsibility lay upon them, but at the same time it was shared, he believed, by the prescribing surgeon, although they did not all seem to be aware of it. From his own experience he could say that a great many prescriptions were written by persons who were not even acquainted with the nomenclature of the British Pharmacopœia, and contained manifest evidence that the prescribers intended them to be dispensed according to the London Pharmacopœia, to which they were formerly accustomed. Therefore, although it was their duty to be loyal to the British Pharmacopœia and to the Medical Council who had authority over them in that respect, there was one duty still greater, and that was to carry out the wishes of the physician. He certainly thought if they saw clearly that the prescriber intended a preparation according to the London Pharmacopœia, it would not be right, where a material alteration had taken place, to follow the British Pharmacopœia. Only recently he had got himself into a difficulty in this way. A prescription was brought to him containing tincture of calumba, which had been considerably increased in strength. He perceived that the prescription bore the stamp of a West-End house of considerable eminence, and concluded that it had been made up according to the British Pharmacopœia. He therefore did the same, using the new tincture which was about two-fifths stronger than the old, and the consequence was that his mixture was returned to him in an hour or two, with a not very polite message that it was so horribly bitter it was impossible to take it. He gave, of course, the best explanation he could, but it was not very satisfactory to the mind of his customer. He would also ask whether the authorities who imposed the Pharmacopœia upon them could not exercise a little more sensitiveness as to the cost of such things as alcohol and ether. He thought where preparations were made unnecessarily costly or complex, the chemist had good reason for complaint, particularly in those preparations which were not so much used in dispensing prescriptions as in ordinary retail for domestic medicine. As to the linimentum potassii iodidi cum sapone, he did not think it would be a great loss to pharmacy if it were never seen again; and in the ordinary soap-liniment, he believed if they were told to use, instead of the strong rectified spirit, a weaker spirit, the product would be much better, as they knew that rectified spirit was a fluid which refused to amalgamate with almost every fluid in the human body. Acetum scillæ was now ordered to be made with the addition of so much spirit, but he was certain that so far from being improved, it was deteriorated, and would not keep for any length of time. He had repeatedly made it with the full quantity of alcohol, as directed, but invariably found that in the course of a few weeks there was a leathery deposit, whereas he had some now in his possession, made more than two years ago, without spirit, which he believed was as good as on the first day. Again, he was quite at a loss to know for what reason the alteration had been made in the British Pharmacopœia with regard to unguentum resinæ, which was now to be made a mixture of white wax, yellow wax, almond oil, and lard. He should much like to know in what respect it was superior to the less costly and more simple ceratum resinæ of the London Pharmacopœia, which was well-known to all who lived in poor neighbourhoods as a very popular remedy. For one ounce of unguentum resinæ, which he used in obedience to the Pharmacopœia, he retailed some pounds of the cerate over the counter as a domestic medicine.

The CHAIRMAN here suggested that, as it was past ten o'clock, it would be better to adjourn the discussion to the next meeting, when he should be happy to hear Mr. Bland in continuation.

The meeting then adjourned.

PHARMACEUTICAL SOCIETY, EDINBURGH.

A Meeting was held in St. George's Hall on Tuesday evening, 11th January; Mr. AITKEN, President, in the chair.

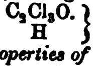
After a few introductory remarks, in which it was stated that the London President, Mr. H. S. Evans, was present, the following communication was made:—"On the Recent Investigation on the Action of Chloral," by Dr. Arthur Gamgee, F.R.S.E., Lecturer on Physiology at Surgeons' Hall, and Physician to the Edinburgh Royal Hospital for Sick Children.

Mr. President and Gentlemen,—Only a few months have elapsed since the time when I had the pleasure of bringing before your notice the results of researches on the action of certain poisons on the blood. These researches, you will remember, showed how, thanks to the recent strides in the science of chemistry, no less than in the study of physiology, great progress is being made in the elucidation of the exact mode of action of various poisonous and medicinal substances. The introduction of hydrate of chloral into medicine will afford another illustration of the advantages which the healing art is likely to derive from discoveries of chemistry, and the introduction of new bodies discovered by its aid to the treatment of disease. But for this science the anæsthetics which we daily employ would be unknown to us, and humanity would be deprived of the inestimable benefits which result from their use in the alleviation of the sufferings which necessarily accompany the use of essential remedial measures. That medicine has much to expect yet from chemistry has only been recently proved. In the iodide of methyl-strychnium we have had lately demonstrated to us how a powerful tetanic poison may be so modified by a chemical operation as to yield a substance having almost exactly opposite action,—an action identical with that of Woorari, the curious American arrow-poison. In the discovery of apomorphia by Dr. Matthiessen we have another instance of the possibility of getting from substances already known to us others possessed of great energy, and endowed with new and important actions, for from the narcotic alkaloid morphia a base has been obtained, whose chief and most marked action it is to produce vomiting. The hydrate of chloral, the, I might almost say, sensational drug of the present day, was, like chloroform, only known as a chemical curiosity until physiological investigation showed it to be possessed of properties likely to prove valuable.

Relations of Chloral to other Bodies.—Let me first remind you of the formula of alcohol, C_2H_6O. This body, as you know, when treated with certain oxidizing agents, yields a substance called aldehyde, a colourless liquid of suffocating smell, miscible in all proportions with water, and well known for its power of reducing solutions of nitrate of silver. This body has the formula

$$\left.\begin{matrix}C_2H_3O.\\H\end{matrix}\right\}$$

Now, by acting for a long time—about seventy hours—upon alcohol by means of chlorine, we obtain a body which appears to differ from it in having hydrogen replaced by Cl, having therefore the chemical formula $C_2H\,Cl_3O$, and represented by the formula



$$\left.\begin{matrix}C_2Cl_3O.\\H\end{matrix}\right\}$$

Properties of Chloral.—This body exists in a liquid condition, possessing a powerfully pungent odour. Its specific gravity is 1500, and its boiling-point is very nearly the same as that of water, being 99° C., or 210° F. Chloral has a great tendency to combine with water, and forms a white crystalline solid body—the hydrate of chloral, which I have to bring under your notice. This hydrate is very soluble in water. It is volatilized by heat, and may be purified in this manner.

Decomposition with Alkalies.—It has long been known that when treated with caustic alkalies chloroform is developed, and at the same time there is formed a formiate of the alkali.

This decomposition is interesting to us, as a knowledge of it led Liebreich to speculate that chloral might be a valuable remedy. The blood being an alkaline fluid, was, he supposed, likely to effect the decomposition of chloral, and to cause a gradual evolution of chloroform throughout the economy. To a certain extent facts appeared to countenance the hypothesis, for chloral was found to produce, when introduced into the system of animals, a more or less deep sleep lasting for hours, which, unless the dose had been excessive, passed off without leaving any serious symptoms. For a description of the chief symptoms which are characteristic of the action of chloral, we are indebted to Liebreich and to Dr. B. W. Richardson.

Action of Chloral on the Lower Animals.—Frogs are usually rendered insensible by doses of half a grain of the hydrate of chloral. Fishes may, as it appears from Dr. Richardson's experiments, be thrown into a sleepy condition by the subcutaneous injection of the substance.

Birds are very easily affected.

I am now about to inject two grains of hydrate of chloral, dissolved in thirty minims of water, under the skin of a pigeon weighing thirteen ounces. In a very few minutes the bird will become drowsy; it may pass into a condition undistinguishable from that of natural sleep, or it may actually tumble upon its side, and remain motionless for a considerable period. (The lecturer having performed the experiment, the pigeon soon fell into a condition of placid sleep, and remained motionless during the rest of the evening.)

I shall illustrate the action which this substance exerts on rabbits by injecting fifteen grains, dissolved in a drachm of water, under the skin of one of these animals. Soon the animal will exhibit disinclination and even disability to move, and then we shall find it passing into a condition of very deep insensibility. Unless the dose be too large the heart will continue to act, and the respiration will go on, and the insensible rabbit will awake from its deep slumbers apparently unaffected. If we observe the temperature in animals subjected to hydrate of chloral, we find, as Dr. Richardson was the first to point out, an extraordinary fall of the thermometer, which again commences to rise when the symptoms begin to disappear.

When given in doses of from thirty grains to one drachm, hydrate of chloral produces in man the same order of events as have been noticed in animals. A deep sleep readily follows its use, and this is not usually succeeded by headache, nausea, or the other disagreeable symptoms which not unfrequently supervene after the effects of narcotic drugs have passed off.

It would obviously be unsuitable for me to discuss in this place the precise physiological action of this drug, even were our knowledge sufficiently complete to enable me to do so. I may, however, just mention some arguments which appear to me to render Liebreich's hypothesis, of the action being due to the gradual development of chloroform from chloral, highly improbable.

It is quite true that caustic alkalies induce the decomposition of hydrate of chloral, but the blood does not contain any of these substances; and it is interesting to inquire whether the alkaline salts which do exist in blood, and upon which its alkalinity depends, are capable of effecting the decomposition of hydrate of chloral.

This alkalinity is due, no doubt, chiefly to alkaline phosphate of sodium; in addition, the blood probably contains some bicarbonate of sodium. Now are these salts capable of decomposing chloral? With regard to the first, I find that even when it is heated to boiling-point in contact with a solution of chloral, it fails to decompose it, while with regard to the second, I find that it is only after the temperature has been raised above 70° C. that chloroform is given off, the evolution becoming extremely free when the liquid is boiled. Chemical facts therefore appear to me to militate against the chloroform theory, which also is, I think, opposed by a consideration of the physiological actions of chloral and chloroform.

In the first place it appears to me that the symptoms which are produced by small doses of chloral are quite out of proportion with those which we can suppose would be caused by an equivalent quantity of chloroform existing in the system. In the case of a deep sleep, lasting for six hours, and following a dose of forty grains of the hydrate of chloral, we must, if we espouse Liebreich's theory, suppose that twenty-six grains of chloroform are sufficient to account for the result. We must, namely, admit that the evolution of chloroform in the blood, at the rate of four grains per hour is capable of producing deep sleep. Now, when we think of the absence of sleep which is constantly noticed immediately after a patient has recovered from the anæsthetic effects of chloroform, we cannot help being sceptical. In these cases the blood is often saturated with chloroform vapour, which continues to be excreted by the lungs for some time after, and yet there may be no tendency to sleep.

If we contrast the action of chloroform and chloral, we find evidences of very great differences. In the former instance reflex action is soon abolished; in the latter, it appears often heightened, always almost, if not quite, unimpaired. And I need only say that this points to an essential difference in the mode of action of these substances on the spinal cord and on the nerves.

Whilst I, therefore, state my conviction that the theory of the action of hydrate of chloral which has hitherto been suggested is untenable, I must express my belief that its introduction into medicine is likely to prove highly beneficial, and to supply us with a new remedy—new, in this sense, that its action will, I am sure, be found to differ most materially from that of our old narcotics and anæsthetics, and so as to cause it to be useful when their use might be attended with danger or inconvenience.

The introduction of this new drug teaches us, gentlemen, how much we are to expect from chemistry and physiology, when their study is pursued hand in hand; when the knowledge of the one science is made available for the purposes of the other. The old alchemists worked at chemistry for no higher motives than the hope of discovering the philosophers' stone, which should transmute the base metals into gold, and confer immortality upon perishable beings. Their work, if it has failed in its original purpose, has, at any rate, led to a glorious result. The science which sprang from their crude and superstitious studies has not, it is true, aimed at the annihilation of death, for a calm and dispassionate reasoning has led all to look upon the search for immortality, as it was understood by the alchemists, as equally vain and absurd as the endeavours to discover perpetual motion. The science has, however, achieved results which are scarcely less remarkable than those which the alchemists anticipated. If base metals have not been converted into gold, the modern chemist has succeeded in obtaining, from coal, products almost as valuable as gold; if he has not succeeded in discovering a universal life-giving elixir, he has, at any rate, supplied the world with bodies capable of contributing to comfort, with substances ministering to health and capable of annihilating pain. There is one, and it is a very glorious aspect which modern science presents, and which appears to me to be suggested by every new application of her resources to the well-being of mankind. True science works for truth alone: content with its rewards, she does not fortunately depend upon the stimulus which mercenary motives supply. Careless of the taunts of the ignorant, the scientific man treads paths which to others appear to have no end, and engages in pursuits which appear to be useless. Is it not, however, apparent from the events of every day, that in truth it is by disinterested scientific work of this kind that the world is generally benefited? Thus, the apparently useless but interesting scientific discoveries of yesterday become the means to-day of enriching or benefiting mankind. The chemical curiosity of to-day may to-morrow become the most valuable remedy in the service of suffering humanity.

In the course of his remarks, Dr. Gamgee illustrated the effects of chloral on a rabbit and on a pigeon. On the motion of Mr. H. C. BAILDON, a cordial vote of thanks was unanimously awarded to Dr. Gamgee for his valuable and interesting communication.

Professor ARCHER, Director of the Edinburgh Museum of Science and Art, then read a paper on the "Animal Substances used in Medicine."

Mr. EVANS moved a vote of thanks to Professor Archer, and, in doing so, alluded to the value of the Professor's remarks, as containing much useful and interesting information. Mr. Evans urged upon the young men present to take advantage of such opportunities as were now so freely afforded to those residing in Edinburgh, assuring all present that an early acquaintance with scientific pursuits was most desirable, because, when more advanced in years, and engaged with the turmoil of business, it was not so easy to prosecute the study of pharmacy. In concluding, Mr. Evans made special reference to his previous acquaintance with Professor Archer while resident in Liverpool, and begged to offer him a personal vote of thanks for all that he had done on behalf of pharmacy and botany, in addition to the ordinary thanks of the Society, which, he felt assured, would be very cordially awarded to the Professor for his paper.

This was carried unanimously, and with acclamation.

[Professor Archer's paper is in type, but press of matter obliges us to defer its publication till next month.—ED. PHARM. JOURN.]

PROVINCIAL TRANSACTIONS.

BRADFORD CHEMISTS' ASSOCIATION.

A very pleasing entertainment, in the shape of a Soirée, held on Friday evening, the 21st inst., formed an agreeable episode in the history of the above Society.

In response to the invitation of the associates, the members and their friends, forming a goodly assemblage of ladies and gentlemen, met at the Freemasons' Rooms, Salem Street, where every kind of material had been amply provided, not omitting substantial refreshments, for both the instruction and diversion of the visitors. A glance round the appropriately-decorated room showed that the intellectual, spectacular, and social features were well represented, the former by microscopes under the manipulation of Messrs. Rimmington and Sands; several beautiful models of ingenious inventions by Bailey and Mancher; and a comprehensive assortment of exceptionally perfect drugs and chemicals, contributed by Messrs. Hearon, Squire, and Francis, and Messrs. Herrings and Co. Under the second class there was the popular Ruhmkorff coil, with its resplendent vacuum tubes; while the rays from the glowing zirconium shone at periods refulgently upon the assembly. Melodies upon the piano were given by Mr. Foster, an associate, and Mr. H. G. Rogerson, Honorary Secretary of the Society.

The hour for discussion having arrived, the President, Mr. M. Rogerson, proposed a vote of thanks to the Assistants for the truly appreciable evening's entertainment they had afforded the company, expressing a wish that it might not be an isolated event in the annals of the Society, but that it might prove merely the first of a series of regularly-recurring festivals of a similar character.

BRISTOL PHARMACEUTICAL ASSOCIATION.

A General Meeting of the Association was held on Friday, December 10, 1869, in the lecture room of the Philosophical Institution, Park Street; Mr. Stoddart, President, in the chair.

The minutes of the previous meeting were read and confirmed.

The Chairman announced that the Council had determined to offer two prizes in each course of the lectures that were being delivered in connection with the Association; each first prize to be of the value of £1. 1*s*., and each second prize, 10*s*. 6*d*.

Thomas Coomber, Esq., F.C.S., then delivered a lecture upon "Some of the Principles of Electricity, illustrated by Experiments drawn from Domestic Resources."

At its conclusion, a cordial vote of thanks to the lecturer was proposed from the chair, and carried by acclamation.

A General Meeting of the Association was held January 14, 1870, in the lecture room of the Philosophical Institution; Mr. Stoddart, President, in the chair.

The minutes of the previous meeting were read and confirmed.

The Chairman alluded with much feeling to the loss the Association had experienced in the death of their late fellow-member, Mr. Giles, senior, and referred to the high estimation in which he was held by all who knew him. He was sure the Association would wish to record that opinion, and would, therefore, suggest for their adoption the following resolutions:—

"That this Association desires to express its feeling of great respect for the memory of the late Mr. Richard Bobbett Giles, who so long and so honourably fulfilled the duties of a Chemist and Druggist in this neighbourhood, and who was ever ready to promote with the utmost cordiality every effort for the advancement of the scientific and practical culture of pharmacy.

"That the Hon. Sec. be requested to forward a copy of this resolution to his son, Mr. Richard William Giles, with the assurance of the hearty sympathy of all his fellow-members in his recent bereavement."

These resolutions were unanimously agreed to.

Mr. BOUCHER then read a paper upon "Hydrate of Chloral," of which the following is an abstract:—

After reviewing the medical opinions and aspect of chloral, Mr. BOUCHER stated the term chloral,* a contraction of chlorine and alcohol, the substances used in its preparation was originally given by Baron Liebig, the discoverer of it in 1832, who, as well as Dumas, prepared it and minutely investigated its properties. At a much earlier date, Scheele and other chemists diligently studied the action of chlorine on alcohol, but do not appear to have actually separated this substance. Nevertheless, as chloral, till within a few months of the present time has continued a laboratory preparation of no pharmaceutical value whatever, to Dr. Otto Liebreich, Chemical Assistant in the Pathological Institute of Berlin, in fairness belongs the credit realized by the addition of this medicine to our list of sedatives and anæsthetics.

In the preparation of chloral, anhydrous alcohol is saturated with dry chlorine gas, when a very beautiful and very simple substitution of elements results, expressed by the following equation:—

$$\underset{\text{Alcohol.}}{C_4H_6O_2} + Cl_8 = \underset{\text{Chloral.}}{C_4Cl_3O, HO} + 5\,HCl.$$

This, however scarcely represents the views adopted by chemists regarding it; the alcohol is supposed to pass into the intermediate state of aldehyd, by having two atoms of its hydrogen abstracted:—

$$\underset{\text{Alcohol.}}{C_4H_5O, HO} + 2\,Cl = \underset{\text{Aldehyd.}}{C_4H_3O, HO} + 2\,HCl.$$

A new and entire rearrangement of elements now takes place, the aldehyd exchanging its three atoms of hydrogen for three of chlorine, to form acechloryl, the compound radical of chloral:—

$$\underset{\text{Aldehyd.}}{C_4H_3O, \dot{H}O} + 6\,Cl = \underbrace{\underset{\text{Acechloryl.}}{C_4Cl_3} \mid O + HO}_{\text{Chloral.}} + 3\,HCl.$$

In carrying out this process, the author followed the instructions of Liebig. Anhydrous alcohol is placed in a dry receiver, through one opening of which dips into the liquid the long limb of a bent tube from a Woulff's bottle. To another opening in the receiver is attached a long glass tube drawn out to a fine point, the object of this being to condense any spirit evaporated by the heat necessary to be applied during the process. The Woulff's bottle is partially filled with pure sulphuric acid, and connected with a large vessel of binoxide of manganese and hydrochloric acid. The chlorine generated is passed in a full stream for many hours, first through the acid, and from thence to the alcohol. At the commencement of the process the alcohol becomes sufficiently heated by the action taking place, but afterwards the application of a little heat will be necessary, not only to favour the action but to drive off an abundance of hydrochloric acid formed during the process. When free chlorine is given off, this part of the process is stopped, the impure chloral transferred to a separatory funnel and mixed with thrice its bulk of sulphuric acid. A good deal of heat and excitement takes place, the result being a layer of thin yellowish-looking oily liquid floating on the surface of the more coloured acid beneath; this is drawn off, and together with a further quantity obtained from the acid by distillation, exposed to a little heat, rectified from a small quantity of fresh sulphuric acid, and again from slaked lime, the product being pure chloral.

Chloral is distinguished by its peculiar, very penetrating odour, caustic, disagreeable taste, by its colourless oily appearance, inaction on nitrate of silver, and by its solidifying in presence of a small quantity of water; it is very soluble in water, alcohol, and ether, and forming with dilute alkalis formiate of the base and chloroform.

$$C_4HCl_3O, HO + KO = KO, C_2HO_3 + C_2HCl_3.$$

The hydrate of chloral crystallizes in two forms, one in needles containing one atom of water, the other in rhomboids with two; specimens of each were exhibited. The author by no means recommended this process for the preparation of chloral, but considered it complicated and tedious, and thought a great improvement would be in generating the chlorine more rapidly, and more immediately in contact with the alcohol, if this were practicable.

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* Viewed by some writers as chloraldehyd.

An interesting discussion, chiefly upon the supposed arrangement of the elements in chloral, and the probable steps that occur in its production from alcohol, followed the reading of this paper.

The **President** then exhibited a sample of so-called Manna which had been sent to him for examination, which he found to contain not a particle of that substance, but to consist solely of rag-sugar or some other form of glucose.

He also introduced the subject of percolation, which led to considerable discussion, the general opinion expressed being in favour (in the majority of cases) of wetting the ingredients with the fluid, and allowing them to *pack themselves* when introduced into the displacement apparatus.

LEEDS CHEMISTS' ASSOCIATION.

An ordinary Meeting was held on the evening of December 15th, 1869, at the rooms of the Association in the Church Institute. In the absence of the President, Mr. **Reynolds** took the chair.

The Hon. Curator, Mr. **Payne**, announced several donations to the Museum.

The Committee appointed to adjudicate the Herbarium Prize, offered by Mr. Harvey, presented their award. Four collections of plants had been received for competition; and as two of these possessed merits which the Committee thought deserving of reward, Mr. Reynolds gave a second prize. When the envelopes containing the names of the successful competitors were opened, the following was the result:—

First Prize.....Mr. Frederic Casson, residing with Mr. J. L. Roberts.
Second Prize...Mr. Francis Mather, residing with Mr. Clapham.

Mr. **Abbott** made a few remarks by way of advice to Associates who might commence to make botanical collections.

Mr. **Abbott** read the paper of the evening, upon "Palms, and their Uses." It gave an exhaustive and very interesting account of the members of this Natural Order, which appears to be second only to the Grasses in utility to man.

The best thanks of the meeting were given to the lecturer, on the motion of Mr. **Brown**, seconded by Mr. **Roberts**.

The ordinary Meeting was held on January 19th, 1870; the President, Mr. **Smeeton**, in the chair.

Mr. J. W. Hardman was elected a Member.

Mr. **Reynolds** introduced the subject for the evening, by taking the volume of 'Proceedings of the American Pharmaceutical Association' for 1868, and rapidly running through its contents. The discussion on the right of pharmacists to retain original prescriptions, giving the patient a copy instead, as advocated by Mr. Parrish and other prominent members of the American Pharmaceutical Association, was brought under notice; also the use of honey in making Hydrargyrum cum Creta, practised in the United States.

The thanks of the meeting were offered to Mr. Reynolds.

MANCHESTER CHEMISTS AND DRUGGISTS' ASSOCIATION.

The Third Monthly Meeting of the Session was held on Friday evening, January 7th, 1870.

Tea, coffee, and refreshments were served at seven P.M., and those present enjoyed a pleasant half-hour's conversazione previous to the more important business of the evening. The Vice-President, Mr. **Brown**, took the chair at 7.30, and called on Mr. Siebold to deliver his lecture on the "Atomic Theory and Modern Systems of Chemical Notation."

Mr. **Siebold** in commencing, referred briefly to the great changes which the science of Chemistry has undergone within the last fifteen years. He illustrated volumetric composition by reference to, and diagrams of, hydrochloric acid, ammonia, and steam, and showed that the smallest quantity of any gaseous compound which can be produced from its elementary constituents, measures two volumes; he also reviewed the ponderal composition of the three substances named, and pointed out the identity of the combining weights with the vapour-densities of nearly all elementary substances.

He next spoke on the law of combination in definite and unalterable proportions and in multiple proportions, and then proceeded to the consideration of the divisibility of matter. He defined molecules as the smallest particles of matter resulting from a division by mechanical and physical means, and atoms as the smallest particles of elementary substances resulting from the chemical decomposition of molecules. He explained that all molecules must be of equal size, and showed that the atoms of elementary substances fill half the space of a molecule, with the exceptions of phosphorus and arsenic, whose atoms are one-fourth of a molecule, and mercury and cadmium, whose atoms are equal to a molecule. He showed that a molecule of hydrogen would consist of two atoms of hydrogen. The lecturer then compared matter in the solid, liquid, and gaseous state, and spoke of molecular attraction or cohesion as being most active in solids; and of molecular repulsion keeping apart at longer distances the molecules of a gas. The theory that the spaces between the molecules of a gas are occupied by spheres of latent heat, he supported by strong and convincing arguments, based on experiments. After dwelling at some length on quantivalence, or the atom-fixing and atom-replacing power of elementary substances, Mr. Siebold pointed to the importance and enormous utility of the modern molecular and atomic theory, laying stress on its services to organic chemistry and to the artificial preparation of organic substances from their elementary constituents, and concluded by thanking his audience for their attention.

Mr. Siebold's lecture was listened to with very great pleasure; the ease and fluency with which it was delivered being the more remarkable, from the fact that the lecturer is a German, and was speaking in English without the help of notes.

The next meeting will be held on Friday, February 4th, at 3 P.M.

Mr. **Wilkinson** will read a paper on the "Additions to the Poison Schedule, and the Proposed Regulations as to the Keeping of Poisons."

ABERDEEN ASSOCIATION OF ASSISTANT CHEMISTS AND DRUGGISTS.

The Second Annual Assembly of this Association was held in the Mechanics' Hall, Market Street, on Thursday, January 6th, 1870; Mr. **James Thom**, President, in the chair.

The objects of the meeting were of a social and convivial character, commencing with tea and terminating with a ball.

The **Chairman**, at the conclusion of the first part of the proceedings, delivered a short address, in which he referred to the objects of the Association, viz. the improvement of its members in the scientific details of the business of a Chemist and Druggist; he also alluded to the prospective appearances of the future progress of the Association, and the benefits to Assistant-Druggists of having opportunities of meeting together.

The meeting consisted of about a hundred and thirty members and their friends, including several masters, and among them Mr. Kay, of Messrs. C. Davidson and Co., along with Mrs. Kay; Messrs. G. and W. Shepherd, jun., of Messrs. Souter and Shepherd; Mr. H. Paterson, of Messrs. W. Paterson and Sons; Mr. Duncan, Castle Street; and Mr. Ross, Castle Street.

It is gratifying to state that on this occasion the masters allowed those in their respective shops to leave earlier than usual.

ORIGINAL AND EXTRACTED ARTICLES.

THE CONSTITUTION OF MATTER.

BY WILLIAM A. TILDEN, B.SC. LOND., F.C.S.,

DEMONSTRATOR OF PRACTICAL CHEMISTRY TO THE PHARMACEUTICAL SOCIETY.

(*Continued from page* 415.)

It is urged by Dr. Williamson, in his recent lecture just quoted, that the objections to the atomic theory hitherto put forward have never assumed the character of open and systematic attack. This is indeed true, but it cannot be forgotten that these doubts and objections have arisen from men occupying the highest rank, not only among metaphysicians, but among chemists and physicists. That chemists generally have uttered little complaint may be ascribed to a very natural disinclination to find fault with a theory which, in one form or other, has done to their science so much good service. Even those who do not place faith in the atomic theory as a truth, are not unwilling to retain it for the sake of the facilities the application of it affords for the expression and colligation of facts.

Putting aside for the present abstract speculations as to the possibility of the existence of finite particles, we shall do best to confine ourselves to considerations which most nearly interest the chemist and physicist. I venture to offer the following examples from the category of phenomena which cannot at present be considered capable of explanation by an appeal to the doctrine of atoms. The instances I have selected are taken from the great number which might be adduced; but, in stating them, I do so in no spirit inimical to the ordinarily received doctrine, but merely to show that our knowledge of the rationale of such phenomena is at present only imperfect. However firm our allegiance to the doctrine of atoms, it can do no harm to view it from the stand-point of an opponent.

1. The great mainstay of the belief in atoms possessing definite weight is the fact that the best known compounds present an invariable composition, which is not altered by increased or diminished pressure, temperature, and the like; and that the proportions of the constituents in any two oxides, chlorides, sulphides, etc., of the same metal are in a simple ratio to one another.

I consider it yet remains to be more satisfactorily shown that this definite character belonging to ordinary chemical combinations passes through to the more complicated instances of which so many are known; such, for instance, amongst others, as the following.

There are certain substances, like carbon, silicon, boron, and some of the metals, which it is well known it is next to impossible to obtain in a state of absolute chemical purity. Carbon, for example, has never, so far as I know, been obtained from any form of charcoal thoroughly purified from minute quantities of hydrogen, oxygen, or nitrogen.

If we take a piece of pure white sugar, and heat it in an open platinum capsule, it melts, catches fire, and, when the combustion is extinguished, there remains a shining brittle mass, which may be heated red-hot in the air for hours; chlorine gas may be passed over it; it may be boiled in various solvent liquids, and dried over again at a red-heat; and, do what we may, the charcoal which remains holds a certain, but not fixed, quantity of hydrogen most tenaciously. Now, in the original carbonaceous compound, the elements are considered to be in a state of chemical combination; if so, it must be admitted that the hydrogen which is retained by the charcoal is also chemically combined with the carbon therein. But the proportion of carbon and hydrogen can never be expressed by a probable atomic formula.

2. There are numerous compounds, some of which are connected with the living animal or plant organism, either as products of secretion or excretion, the constitution of which we believe we understand perfectly, not only because they exhibit definite properties, but also because many of them can be artificially produced by processes of synthesis; but there are others from which these are products of disintegration, which have never been formed synthetically, nor is there any probability of their being so, and which, whilst presenting tolerably definite external characteristics, are so complex in composition, that in order to express the atomic proportion of their constituents, we are obliged to reprosent their molecules as built up of hundreds of atoms. When we come to such formulæ as $C_{116}H_{240}N_4PO_{22}$, or $C_{72}H_{113}NaN_{18}SO_{22}$, would it not be more candid to give up definite proportions, and admit that these may be examples which do not fit the rule?

3. The phenomena of solution can be explained only upon the assumption that some modified form of chemical affinity is the disposing influence in such cases. That attractions related to those commonly called chemical are exerted is probable, from the well-known fact that there is a sort of "elective affinity" exhibited in the action of different solvent liquids upon solid and other substances, and also that some of the solutions produced exhibit a stability, uniformity, and definiteness of character, rivalled only by those of true and undoubted chemical compounds. Examples of the latter condition are met with in the combinations of hydriodic and hydrochloric acids with water: at a certain stage of concentration, and under uniform barometric pressure, these liquids have a constant boiling-point and specific gravity. Examples of the selective power of solvents are so familiar and numerous that one will suffice here.

Water, HHO, dissolves nearly all salts; no fatty substances; few organic principles, except those of saline constitution.	Alcohol, EtHO, dissolves few salts; some fatty bodies; but chiefly crystallizable organic substances.	Ether, EtEtO, dissolves scarcely any salts; but chiefly fatty and highly carbonaceous substances.

Here are three liquids, usually regarded as possessing analogous chemical constitution; alcohol being formed from water, and ether from alcohol, by the successive replacement of the atoms of hydrogen by a hydrocarbon radicle. In proportion as the carbon increases in the solvent, so its affinity for carbonaceous substances increases; whilst, on the other hand, as the saline character of the solvent is lost (water being usually regarded as a kind of salt), so its action upon saline bodies decreases. Solutions can, of course, be prepared of any degree of dilution at pleasure.

Further illustrations of the *chemical* nature of the attractions which give rise to solution may be found in such simple and familiar experiments as the following:—If some resin be dissolved in rectified spirit, and water be then added, the whole of the resin is redeposited in the form of a precipitate. The spirit has an affinity for the resin, but a greater affinity for the water; it therefore parts from the former in favour of the latter, and the resin being insoluble in the new compound, is thrown down again.

If alcohol is mixed with water, the resulting compound possesses a density greater than the mean of the densities of the two liquids; this shows that contraction of volume has taken place; consequently there must be a bond between them more intimate than that of mere mechanical mixture.

4. There are a few very interesting bodies, among the best known of them being the graphitic acid discovered by Brodie, the constitution of which

seems to bear upon the subject under discussion. Graphitic acid is prepared by the action of powerful agents of oxidation upon that variety of carbon only which is known as "graphite" or "blacklead." The combining weight of the carbon in this compound is reckoned as 33. Now it is curious that the "atomic" weight, calculated from the specific heat* of graphite, closely approximates to this,—it is about 32. Here is a number which, if at all to be relied upon, is irreconcilable with the atomic hypothesis, no even number of atoms, each weighing 12 (or even the old number 6), would give, when united together, an aggregate of 32 or 33. There are indications, though not yet well-established, that there are differences of a similar kind in the atomic weight of several other elements (silicon, sulphur, phosphorus, and probably antimony and others) when examined under the different forms known as their allotropic modifications.

5. The influence which quantity† exerts upon chemical reactions, is remarkable in almost every experiment that can be devised; in some instances it amounts to a power which is capable of determining the manner of a reaction even apparently in opposition to ordinary affinities. The chlorides of bismuth and antimony are deliquescent bodies, very soluble in a *small* quantity of water, but decomposed by a larger quantity. The perchloride of antimony has the formula $SbCl_5$; by the action of a considerable quantity of water it gives an oxide and hydrochloric acid.

$$2\,SbCl_5 + 5H_2O = Sb_2O_5 + 10\,HCl.$$

What we have to pay attention to in such examples is, the fact that if the experiment be tried with the weights represented in the symbolic equations, the decomposition will not be found to take place.

For instance, if $2\,SbCl_5 = 599$ parts, and $5\,H_2O = 90$ parts, be mixed together, the result will be a crystalline mass; and even if a further addition of water be made, the decomposition does not occur. A large and indefinite quantity of water is requisite to bring it about. Such phenomena were known long ago, when the atomic theory was first propounded, and were used as arguments against it by its opponents. One eminent chemist even thought it possible that quantity might compensate for feebleness of chemical attraction, so that the less energetic a body was in its affinities, the smaller its combining weight. This view was of course not long retained as a general theory of chemical combination. These facts, however, offer an unsolved problem up to the present day; for though I am not ignorant that explanations have been attempted, they do not appear to me to dispel the difficulty.

6. Leaving now chemical considerations and passing to an entirely different form of argument, I quote the following paragraphs, written by the late Mr. Faraday in 1844. Faraday, it must be remembered, was not only a physicist, but a chemist.

"The view of the atomic constitution of matter, which I think is most prevalent is, that which considers the atom as something material, having a certain volume upon which those powers were impressed at the creation, which have given it from that time to the present the capability of constituting when many atoms are congregated together into groups,—the different substances whose effects and properties we observe. These, though grouped and held together by their powers, do not touch each other, but have intervening space, otherwise pressure or cold could not make a body contract into a smaller bulk, nor heat or tension make it larger; in liquids these atoms or particles are free to move about one another, and in vapours or gases they are also present, but removed very much further apart, though still related to each other by their powers. If the view of the constitution of matter referred to be correct, and I may be allowed to speak of the particles of matter and of the space between them [in water or in the vapour of water for instance] as two different things, then space must be taken as the only continuous part, for the particles are considered as separated by space from each other. Space will permeate all masses of matter in every direction like a net, except that in place of meshes it will form cells isolating each atom from its neighbours, and itself only being continuous.

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* See page 414.

† Important and perhaps more conclusive experiments have been made upon gaseous mixtures by Bunsen, and upon mixed solutions by Debus and others.

"Then take the case of a piece of shellac, a non-conductor, and it would appear at once from such a view of its atomic constitution that space is an insulator, for if it were a conductor the shellac could not insulate, whatever might be the relation as to conducting power of its material atoms; the space would be like a fine metallic web penetrating it in every direction, just as we may imagine of a heap of siliceous sand having all its pores filled with water; or as we may consider of a stick of black wax, which, though it contains an infinity of particles of conducting charcoal diffused through every part of it, cannot conduct, because a non-conducting body (a resin) intervenes, and separates them one from another like the supposed space in the lac.

"Next take the case of a metal, platinum or potassium, constituted according to the atomic theory in the same manner. The metal is a conductor; but how can this be, except space be a conductor? For it is the only continuous part of the metal, and the atoms not only do not touch (by the theory) but must be assumed to be a considerable way apart. Space, therefore, must be a conductor, or else the metals could not conduct, but would be in the situation of the black sealing-wax, referred to a little while ago.

"But if space be a conductor, how then can shellac, sulphur, etc. insulate, for space permeates them in every direction? Or if space be an insulator, how can a metal or other similar body conduct?

"It would seem, therefore, that in accepting the ordinary atomic theory, space may be proved to be a non-conductor in non-conducting bodies, and a conductor in conducting bodies, but the reasoning ends in this, a subversion of that theory altogether; for if space be an insulator it cannot exist in conducting bodies, and if it be a conductor it cannot exist in insulating bodies. Any ground of reasoning which tends to such conclusions as these must in itself be false."*

But there has been offered to us a way for escape from the contradictions into which we are led by this manner of handling the ordinary atomic theory. It is open to conjecture, that matter may be continuous,—of a homogeneous not heterogeneous texture,—elastic, not composed of hard particles, and, being continuous, consequently subdivisible without limit. According to this notion there may be *masses* of any conceivable smallness, but so long as they possess magnitude these are not *atoms*, *i. e.* indivisibles. The two theories differ in this respect,—the one teaches the existence of particles which are very small, but still composed of parts, and possessing a determinate and not difficultly-imaginable magnitude. They may be compared to a heap of cannon balls, or any other symbol selected from ordinary objects. The other theory disregards the shell of the imaginary spheres, and treats only of their centres. These points are presumed to be the centres of action of radiant forces, under some conditions attractive, under others repulsive.

Are these two theories altogether incompatible with each other? It certainly seems as difficult to dispense with the assumption of atoms as it is to manage them in their assumed combinations. But would it not be allowable to figure these atoms not as weighing fractions of ordinary units of weight; may we not say that they hold the place of the "centres" of force just referred to, that they are, in fact, *infinitely* small?

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* Phil. Mag. vol. xxiv. p. 136.

Supposing such a modification admitted, the usual atomic theory becomes nearly identical with the theory of Boscovich. Atoms, on this view, occupy a position with regard to masses analogous to that of mathematical points, by the juxtaposition of which lines, surfaces, and solids are generated. A line, it is obvious, may be divided by a ruler or other mechanical means into any number of shorter lines, but these are still made up of many points. The analysis of a line into its constituent points can only be effected mentally; it is, however, not a very easy thing even to imagine a point, because it cannot truly be compared to anything we have ever seen. So with atoms, the matter of bodies. Neither the points nor the atoms have any real, tangible existence as bodies, but we are not on that account precluded from reasoning upon them as though they had. Moreover, we do not always construct theories because we believe them to represent faithfully what is actually the case, to stand in the position of absolute truths, but because they enable us to co-ordinate phenomena, and bring within reach many things which would otherwise lie out of the sphere of our limited intellectual capacity. This hypothesis requires the absolute weights of the atoms to be reduced proportionately to their magnitude; they must be assumed infinitely small; nevertheless, though infinite, they may bear to each other the ratios which we commonly express as atomic weights. It may seem an anomaly that masses should be acted upon by gravity—that is, have weight—whilst their constituent parts have not; but the anomaly vanishes if we allow that infinite smallness is not absolutely nothing.

Such a view of the constitution of matter seems to me to be more in harmony with the general plan of nature, so far as science has at present been enabled to trace it, than any based upon the exclusion of the idea of infinite divisibility. It allows us to form at least rough conjectures as to the mode of action and reaction subsisting, not only between the different forces themselves which are known to affect matter, but also between those forces and matter itself as the subject of their operations. No corpuscular hypothesis, as we may distinguish Dalton's atomic theory, does, nor can, elucidate, however crudely, the *modus operandi* of such as are denominated imponderable agents, in their relations to ordinary ponderable matter. I can see no way of explaining in a rational manner processes of photography or the action of heat in promoting chemical combinations, upon the assumption of finites as the objects and infinites as the agents in the operation. But if we superadd to the ordinary hypothesis the conception of infinity extended to the weight as well as magnitude of atoms, we reduce to a minimum the difficulty of correlating our ideas of ordinary matter with those of the mysterious agencies, light, heat, and the other "physical forces."

Of recent years our notions of the nature of the phenomena which we ascribe to these invisible agents have gradually suffered complete revolution. It is less than a century ago when the opinion was very generally held among men of science, that the phenomena of heat were due to the existence of a peculiar substance or form of matter called "caloric." According to this view, bodies became heated by absorbing caloric; they became cold by losing caloric; radiation of heat was the shooting out of particles of caloric; the phenomena of specific and latent heat, in like manner, were thought to be occasioned by a varying tendency to a kind of combination between the particles of ordinary matter and those of this subtle material, caloric.

In this our time, all these changes are universally believed to be caused by *motion*. Vibratory motion of the particles of bodies is supposed always to be going on; increase the rapidity of the vibration, and you get what is called increase of temperature—the body becomes hotter; diminish the rapidity, and you get depression of temperature, or cooling. Allow these vibrations to assume a rhythmical order, to take the form of waves, and the propagation of heat by radiation is accounted for.

It was at a period still less remote, no more than about forty years ago, that the old "emission theory" of light came to be displaced from the convictions of philosophers. It had been held since the time of Sir Isaac Newton that there existed minute particles of excessive tenuity, which, darting out from luminous bodies through space and through transparent media at the rate of something like 160,000 miles a second, gave rise to the phenomena of light. But in consequence of certain phenomena being discovered, the existence of which could not be explained by the aid of this theory of corpuscles, attention was drawn more forcibly to the "theory of undulation," which then almost at once supplanted it, and has held its ground since. Belief is now fixed, not in the existence of rapid-shooting particles, but in waves formed by the rhythmical vibrations of an ether which is supposed to exist throughout space. Whisperings have not been wanting that this "ether" may somehow be connected with ordinary matter, either as the *materia prima,* out of which all things were in the beginning educed, or perhaps, as the ruins into which the clumsy molecules of gravitating matter may have tumbled. That there is something possessing inertia diffused through the interplanetary spaces seems likely from the fact known to astronomers that the motion of certain comets is continually diminishing.

In the early days of the science of electricity, all the phenomena manifested by this wondrous agent were ascribed to the existence of a fluid; afterwards the hypothesis of two fluids was required. The existence of fluids in electrically excited bodies has, however, been for some time regarded as a myth. From the fact that electricity and magnetism are mutually convertible, and these again producible from, and reducible to, heat, light, or *ordinary motion;* and taking into account the circumstance that they are unknown apart from ordinary matter, it has been conjectured that these "fluids" may in reality be a *motion* of a peculiar kind existing in the particles of bodies. Heat, light, electricity, and magnetism are then motion.

By an extension of the idea, superposed upon a revival of the long-cherished notion of the universality and unity of origin of matter, "it is conceivable that the various kinds of matter now recognized as different elementary substances, may possess one and the same ultimate or atomic molecule, existing in different conditions of movement."* These are the words of a philosopher, unhappily for science, now no more; and they were written at the conclusion of a life which had been devoted to the study of molecular dynamics. If we accept them, we arrive at a generalization as grand as it is simple in conception, as universal as it is obedient to the requirements of science.

The phenomena of which we are the witnesses, and which in our own bodies we serve to exemplify, are continually reminding us that all in the universe is change. Change, we may henceforth believe, is motion.

ON THE TRIPLET OF TERMS—MATTER, SUBSTANCE, BODY.

BY A PROVINCIAL ATOM.

In offering some remarks upon the three appellatives which stand at the head of this paper, I have no intention either of covering the same ground that is traversed in the interesting paper of Mr. Tilden, commenced in the last number of this Journal, or, with one exception, of commenting upon that paper. My subject properly ends just where that of Mr. Tilden begins. The keynote of the observations I shall have to offer is this,—that I demur to the use of the word Matter in the sense in which it is employed by Mr. Tilden and by many men of science, on the ground that Matter is, or should be, conceived as homogeneous; and that it is really Body of the constitution of which Mr. Tilden treats.

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* Graham: "Speculative Ideas respecting the Constitution of Matter," Journ. Chem. Soc. vol. xvii. p. 368.

It may be answered that, as long as the terms employed by a writer are generally understood, further precision is needless, or even pedantic. But, although the three words of which we are speaking are commonly used as synonymous; or, rather, though the more general and indefinite are often substituted for the better defined terms,—Matter for Substance or Body, and Substance again for Body,—yet this laxity, justifiable, and even commendable as it is in the loose undress of popular discourse, should not be tolerated in the well-fenced fields of science. Here, each term must be kept within its own ring-fence, and not be allowed to encroach upon, or intermeddle with, any other. Nowhere is the god Terminus so jealous and so exacting, as when he presides over the demarcations of scientific boundaries. Hence, as there are no words which are truly synonyms, it would appear expedient and even obligatory, when we possess a series of related words—Matter, Substance, Body—which express three stages of the evolution of one conception (which stages may be represented for the occasion by such formulæ as M, FM, F^nM), to restrict each term to its own special significance, and not to use, *e. g.*, M when we really mean F^nM.

Conscious that the subject of this paper is of a rather abstract and speculative character,—that it lies within the domain of philosophy rather than in that of science,—I feel justified in asking the reader's forbearance with such deficiencies as are fairly due to the nature of the subject; with such, but with no others. The question being one of pure reasoning, being, moreover, almost destitute of the support to be derived from facts, and in its greater part lying beyond the bounds of any possible experience, it is inevitable that intellects of different conformations should arrive at conclusions somewhat different. Still, whatever conclusions may be formed respecting the doctrines I have advanced in relation to Matter and Substance, I trust that my readers will be of opinion that I have succeeded in drawing distinct lines of demarcation between the three terms treated of, and that I have rendered a service—a slight one it may be, but still a service—to the terminology of our science. For Chemistry is a science of precision, of a precision cognate, if not equal, to the precision of mathematics; and for it to employ any appellative, even if only in an occasional use, unless such word is used as a *term*, *i.e.* as containing within itself a precise and definite meaning,—so much and no more, would be something less than creditable.

Thoughtful men will probably have observed that the first principles of all self-contained, independent sciences are shrouded in impenetrable darkness. So far may human research go, but no further. Every tree of knowledge is rooted in a soil of metaphysic, and while all above ground, from the solid trunk to the furthest and minutest and most complicated ramifications, is exposed to the inquisition of man, the cryptal root is inexorably withheld from his gaze. Yet, though we are unable to pursue its roots into the metaphysical ground in which they are imbedded, there exists for every true science a set of terms intermediate between the metaphysical roots below and the first clear upspringing of the trunk;—terms which partly denote terminations of the trunk, partly beginnings of the roots; and it is *from* and *at*, but not *with* such intermediary terms, that all science begins. In the science of chemistry, the metaphysical root is Matter; the solid physical trunk which supports the whole fabric is Body; while Substance, which is partly metaphysical, but partly also physical, lies intermediate between the two, and constitutes the step of transition by which the lower passes into the higher form.

Having premised so much, we can now pass on to the consideration of the three terms in question :—

1. *Matter* (*materia prima*, *χάος*) is a purely negative and metaphysical idea, and we can only say of it, that it is absolutely negative, absolutely passive, and absolutely unlimited. Positive knowledge respecting it we have none, nor can have; not because of the difficulty of the task, but because the subject is, by its nature, unknowable. If it were not that it sounds like a pun, the best definition of Matter would be, M = nothing; since that out of which all things are made, must itself be *no* thing;* yet, like the cypher of arithmetic, though nothing in itself, with a potentiality of becoming all things. In brief, we have no choice but to regard Matter as the passive and negative, and therefore infinitely plastic element of creation;†

"The womb of Nature, and perchance her grave."

2. *Substance*. I assume, as every chemist *must* assume, the two anti-poles—the Α and the Ω of physics—Matter and Force, which are diametrically opposed, as negative and positive, passive and active; neither of which, however, enters within the sphere of the science, though both are indispensable postulates of its existence; *i. e.*, they do not rank among its constitutive terms, but are only regulative and limiting ideas. Substance, then, is conceived as generated by Force upon Matter; and in this view, borrowing the chemical notation to illustrate my meaning, and denoting Matter by M, would be symbolized by FM. Now, an infinite force or activity, operating in space upon infinite passivity, results in infinite limitation; and infinite limitation in space, *i. e.*, infinite smallness, is precisely atomicity. But we cannot ascribe to this atomic Substance any physical properties.

Whether this Substance is, as seems more consonant with reason, homogeneous, or whether it is heterogeneous, we have no means of knowing. But the view we have taken of its constitution seems effectually to dispose of a problem which has often been mooted, viz., whether all bodies hitherto considered simple may not be capable of being reduced to some one ultimate and still more simple element, which underlies them all. For, if this Substance which we are discussing be the one element common to all bodies, then, since it does not subsist isolated, and is not cognizable through human senses, to be able to resolve bodies into this element would be, practically, and as far as men are concerned, to be able to annihilate them; which is a *reductio ad absurdum*.

It is *from*, but not *with* Substance, considered as a congeries of atoms, that the science of chemistry begins. Substance, thus constituted, it is compelled to assume as its *materia prima*, and, starting with an atomic theory, it proceeds to construct its molecules, which are the first cognizable elements in the science.

3. *Body*. In touching upon Body, we tread at last upon firm ground. Its symbol, in harmony with the two preceding cases, would be $F^{n}M$, where the co-efficient (^{n}) denotes the multiplicity and variety of the transmuted forces that give rise to the manifestations which we term the properties and qualities of the innumerable bodies which constitute our system. The absolute simplicity of Matter, and the comparative simplicity of Substance have now

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* Thus reversing the old maxim, "De nihilo quoniam fieri nil posse videmus."

† To compare great things with small, Matter may be figured, adopting chemical phraseology, as the neutral base of creation.

become merged in the infinite variety which characterizes the development of bodies. And it is with the laws of the constitution and relations, of the reactions and comportment of bodies that the science of chemistry is alone concerned.

Atom, Molecule, Particle. In close analogy with the triplet which we have been discussing, but at the opposite extreme on the scale of magnitude, is another triplet,—Atom, Molecule, and Particle or smallest part. With respect to the first two, their meaning is too well defined for any confusion to be possible. The third might advantageously be reserved to denote the smallest parts of which compound, and perhaps even simple, bodies are composed. For, it is by no means to be taken for granted, that these ultimate parts are identical with molecules, since each such part may consist of a group of molecules, less or more numerous. Nor does it seem altogether beyond the reach of possibility, that a day may come, when we shall be in a position to demonstrate, though not perhaps to see, the ultimate particles of some, if not of all bodies.

I cannot agree with Mr. Tilden, that the Atomic theory is employed simply as a metaphor. True, that it must ever remain a theory, inasmuch as the actual physical existence or nature of these assumed atoms can never be demonstrated. But neither can the existence of space, nor the reality of body. *An* atomic theory is an absolutely indispensable hypothesis, without which a coherent and stable science of chemistry would be simply impossible.

If it were necessary to support the opinions I have advanced respecting Matter by an appeal to authority, I might point to the fact, that among all nations, as soon as men began to philosophize, and to construct systems of cosmogony, they have ever conceived the first element of creation such as I have depicted it.* The philosophies of Chaldea and Egypt, of Persia and India, are all founded upon the conception of a negative and passive element, called sometimes Night, or Darkness, sometimes Chaos, sometimes the principle of Evil; but always by some designation the opposite of light and activity.†

We meet with no reliable atomic theory of cosmogony, corresponding to the conception of Substance, till we come to the Greek schools, in which the subtle and restless intellect of that versatile race developed every phase of the cosmogonic idea, from the Matter taught by the Pythagorean Empedocles, whose very words might have been adopted in my sketch, to the atomic Substance of the Ionic school, then to the distinct atoms of the Eleatic sect, till we are landed in the gross corporealism of the particles, erroneously called atoms, of the Epicurean system.‡

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* I may be allowed to say in a note, what would scarcely be permissible in the text of a purely scientific journal, viz. that it would be remarkable, unless we were able to assign a valid reason for the fact, that the more profound philosophies, those which allied themselves the most closely with the religious idea, inevitably adopted pure matter as the basis of their cosmogonies; and in proportion as systems receded from this basis, through atomic substance, atoms, and corpuscules, in like proportion the religious idea became weakened and disappeared. And for this very sufficient reason. The reciprocal ideas of matter and of Intelligent omnipotence are so inextricably associated and so infinitely repellent, that to hold either firmly calls up and sustains the other in equal strength; just as the intensity of the electric fluid at one pole is balanced by a corresponding and co-ordinate intensity at the antagonistic pole. Whereas, systems which commence their cosmogony with one or more of the first great stages in the act of creation already completed, have, in proportion to the advanced stage of cosmogonic basis which they make their starting-point, less and less need of a creator to finish the work; and therefore naturally issue in what is usually called materialism, but which would more appropriately be termed corporealism.

† "Chaos his dark pavilion spread
Wide on the wasteful deep; with him enthroned
Sat sable-vested Night, eldest of things,
The consort of his reign; and by them stood
Orcus and Hades."—*Paradise Lost, Book II.*

‡ Rather of the later and degenerate Epicureans—a degeneracy, however, which was only

It follows from all that has been said, that the inter-relations between the members of the maximum triplet, Matter, Substance, Body, as well as those between the members of the minimum triplet, Atom, Molecule, Particle, may be figured by writing the last two members of each series as the second and third powers of one radical; as, *e. g.*, X, X^2, X^3, and x, x^2, x^3; with which observation the subject may be dismissed.

ON A SOLUTION OF MORPHIA FOR HYPODERMIC INJECTION.

BY WM. MARTINDALE,

DISPENSER AND TEACHER OF PHARMACY TO THE UNIVERSITY COLLEGE HOSPITAL.

The mode of administering opiates hypodermically, whereby a much less dose proves efficacious, and the derangement of the stomach and other disagreeable effects, when taken by the mouth, are avoided, has almost become universal in cases where these objections would tend to prohibit their use. To quote our senior physician:*—"Who that has suffered from a painful local affection can think of the alleviation to his sufferings which followed on the subcutaneous injection of an anodyne, without gratitude?"

The solution for the purpose should be an aqueous one, neutral if possible, and of such strength that six minims contain a maximum dose. The syringe commonly used is graduated up to six minims. In addition to this graduation, some have the piston worked by a screw, of which so many turns are equal to a minim; others are worked by pressure in the ordinary manner.

A solution of morphia—one grain in six minims, the most convenient strength—may be made by first dissolving one drachm of the acetate (recently prepared) in about four fluid drachms of hot distilled water, adding a drop or two of diluted acetic acid, if the solution be not complete. Filter into a graduated measure while hot, and, the fluid being all passed through, wash the filter by sprinkling over it sufficient distilled water, that the whole filtered product, when cold, may measure exactly six fluid drachms.

It is important that the acetate of morphia be recently prepared. It has then, as found in commerce, a faint acetic odour, and is an almost pure white dry powder. If of a pale brownish-grey colour and having a somewhat musky odour,—characteristic of age,—it will be less soluble. This is not due to the loss by volatilization of acetic acid merely, as this loss, if replaced, and a complete solution effected by applying heat,—the strength of one grain in six minims being adhered to,—the solution, probably on account of the salt having undergone some molecular change by keeping, will, when cold, become a mass of feathery crystals.†

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the inevitable development of an original germ,—when the lines in which Lucretius burlesqued the homœomery of Anaxagoras, became scarcely too pronounced an exposition of Epicurean tenets.

"Ossa videlicet e pauxillis atque minutis
Ossibu'; sic et de pauxillis atque minutis
Visceribus viscus gigni: sanguenque creari
Sanguinis inter se multis co-euntibu' guttis;
Ex aurique putat micis consistere posse
Aurum: et de terris terram concrescere parvis; etc.
Lib. I. 835, *et seq.*

* See Sir W. Jenner's Address, delivered before the British Medical Association at Leeds, 1869.

† A case of this kind came under my notice in which a physician had a solution of the above strength prepared at one of the leading dispensing establishments; when required for use, what was intended for a solution was found to be a mass of crystals!

The solution should not be kept long. When prepared as above, it is almost void of colour, but gradually changes to a vinegar-brown. If the acetate of morphia be not quite fresh, this colour is produced in the solution when first prepared.

Where there is not much demand for the acetate, it will be impossible to have it *always* recently prepared. In such cases it would be better to prepare the solution direct from pure morphia and acetic acid, using 25 per cent. less than would be required of the acetate, to allow for the combined acetic acid.

To make six fluid drachms of the solution in this manner, forty-five grains of morphia and about four fluid drachms of diluted acetic acid will be required. Mix them in a small flask or ordinary ounce vial, and apply the heat of a water-bath till dissolved, adding a drop or two more of the acid, if necessary, being careful that the solution at last is neutral or only slightly acid. Filter as directed above, and add sufficient distilled water to make six fluid drachms. In this solution one grain of pure morphia will have been dissolved in eight minims, and it will contain one grain of the acetate in six minims.

Other salts of morphia might be used with advantage. Among these, the so-called bimeconate is very soluble, and makes a tolerably stable solution. Injected, it appears to be quite as active as the acetate, although it represents about one-fourth less of pure morphia; but, being uncrystallizable, its composition as generally made may not be so uniform. The citrate is likewise a very soluble salt.

The hydrochlorate and sulphate each requires upwards of sixteen parts of water to hold them in solution. This prohibits their use for injecting hypodermically, as a large dose could not be conveniently administered by the syringe in ordinary use. As regards the sulphate, this statement is opposed to the statement of Abl, quoted in Gmelin's 'Chemistry,' and Storrer's 'Dictionary of Solubilities,' that it is soluble in two parts of water at 18·75° C. (about 66° F.). From repeated experiments, both with the freshly-prepared salt and others, I find this to be an error. This salt of morphia, which is easily crystallizable and very stable, is most preferred in the United States.

University College Hospital, January 21, 1870.

THE COMPOSITION OF CHLORODYNE,

Which is now proved to be, substantially, only a disguised solution of Morphia.

BY A PROVINCIAL.

It might reasonably have been anticipated, that a subject so important and interesting, both to physicians who prescribe and to chemists who dispense it, as the composition of the popular medicine chlorodyne, would have attracted a fair amount of attention; and that the invitation conveyed in the paper entitled "Chlorodyne *versus* Liq. Chloroformi Co.," which appeared in the last September number of this Journal, would have been freely responded to. Instead of the two or three dozen letters which might have been expected, we have been favoured with just three; viz. one from Dr. C. Kidd, in November; one from Dr. T. S. Dowse, in December; and one from Mr. E. Smith, in the last number. Are we then to infer from this reticence, that there is such laxity among medical men, that they are contented, even after an opportunity for investigating the subject has been afforded them, still to go on prescribing a nostrum, with blind faith in its occult powers, and without caring to ascertain what it is they are giving to their patients? And are we to suppose that chemists are so unobservant that they take no note of whatever information reaches them respecting chlorodyne? or so indifferent that they do not care to take the trouble of communicating their information? Or is it that, from a feeling of fellowship, they are reluctant to say anything that may possibly injure vested interests? "Not to put too fine a point upon it," it would have been more agreeable if chemists had had more to say on the subject, as well as more to do with it, in the way of analysis. I am afraid that my notions must be either rather heterodox or rather in advance of the times. For to me it appears, that, having regard to the anarchy which prevails with respect to the composition and strength of the numerous so-called chlorodynes, and to the great extent to which compounds, of all degrees of strength, and of considerable variety of composition, are used throughout the kingdom, it became the duty of our Council to take up the matter officially, and to put forth an authoritative statement on the subject. Does no power reside in the Council to give its official sanction, or at least its approval to a necessary formula, in the interval between the editions of the Pharmacopœia?

However, what has been wanting in the tale of communications, has been amply made up in the weight; and in Dr. Dowse's letter on the physiological aspect of the case, and Mr. E. Smith's communication on the pharmaceutical side, we have all that we need towards a settlement of the controversy.

The brief remarks of Dr. C. Kidd call for very limited comment; the most remarkable among them being that, while he confesses that he "has tried all three specimens pretty extensively," he appends the *naïve* declaration, that "the profession, if guided honestly . . . should discountenance secret formulæ." (But Dr. Kidd writes from Ireland.) I quite coincide in his opinion, that two of the specimens he names do not contain belladonna. But his statement, that "one kind of chlorodyne, as to certain symptoms, differs as much from the others as crude opium from prussic acid, if not more," must be taken *cum grano*. An allegation, so contrary to all probability and to all experience, cannot dispense with the support of distinct and well-defined cases.

Dr. Dowse (whose obliging expressions towards myself I take this opportunity of acknowledging), in the very interesting and graphic history which he records, of a case of poisoning by Dr. Browne's Chlorodyne, has furnished a most valuable contribution towards the decision of the controversy,—a controversy now, however, no longer. This case, as indeed I had anticipated that any such case would do, proves most distinctly and indisputably that, that chlorodyne in sufficient doses *does* contract the pupil, and thus sweeps away the one flimsy screen, viz. the assertion that *his* "Chlorodyne never contracts the pupil,"—that Dr. Browne had set up to hide the nakedness of the exclusive pretensions of his "*remedium*." Notwithstanding the disingenuous subterfuge which, under the title of a "Warning," he still persists in advertising, I greatly doubt—whatever his success with the public may be—whether, after the published analysis, he will be able much longer to hoodwink the profession, or to smother the now ascertained and proven fact, that chlorodyne is very little more than a disguised solution of morphia,—mixed with much faith in those that prescribe it.

Belladonna. Notwithstanding the plausibility of Dr. Dowse's suggestion, that Dr. Browne's chlorodyne owes part of its efficacy to belladonna, I find myself unable to agree with him, and for the following reasons:—1. I have never known it, even in full doses, produce any results at all similar to the well-known effects of belladonna. 2. We must not draw too large inferences from a solitary case. Is it impossible that the joint action of morphia and hydrocyanic acid may have produced the symptoms described by Dr.

Dowse?* 3. Mr. E. Smith has not succeeded in finding any traces of atropine. And though I admit that, in the case of such a delicate alkaloid, this negative evidence may not be absolutely conclusive, still, if any had been present, it is highly improbable that so careful an analyst, when he was seeking for it, would have failed to find it. Still less is this probable had it been present in sufficient quantity to produce the symptoms described by Dr. Dowse. Finally, if this chlorodyne really contained any operative proportion of belladonna, I think this very decided drug would, long since, have proclaimed its presence there.

Indian Hemp. With respect to the tincture of Indian hemp, I quite agree with Dr. Dowse and Mr. E. Smith, that it does not enter into the composition of chlorodyne; and even if it did, the assigned quantity would be practically inert.† But it was a rather plausible conjecture,—remembering the stories that have been told of the effects of "bhang" upon the Sikhs and Sepoys,—that an Indian doctor, when concocting an anodyne compound, would be likely to have recourse to Indian hemp.

With all deference to Dr. Dowse, I must still adhere to my original position, "that the efficacy of all the reputed chlorodynes is due almost entirely to morphia, modified, and only slightly modified, by," etc. To this statement, however, the case reported by Dr. Dowse reminds me, that I should make one qualification, viz. that that remark applies to *legitimate* doses only. It is to such doses that the balance of ingredients in the composition is addressed. In extraordinary doses this balance might be overturned, as, *e. g.* if an ounce were taken at once (assuming Mr. Smith's proportions to be correct) it might kill, not through the more slowly-moving deadliness of the principal ingredient, morphia, but with the lightning stroke of the normally subordinate hydrocyanic acid.

Both the medical profession and pharmaceutists are greatly indebted to Mr. E. Smith,—on my own part I feel personally grateful to him,—for his painstaking analysis of Dr. Browne's Chlorodyne. This was the one, and the obvious thing wanting to settle the controversy; and it is only surprising—unless we admit the supposition, that a fellow-feeling makes us wondrous kind—that no pharmaceutist had earlier undertaken the duty. I agree with Mr. E. Smith, that both Dr. Ogden's and Mr. Squire's formulæ are absolutely worthless. Indeed, it appears quite unaccountable that Mr. Squire could have lent the sanction of his name to so obviously and even ridiculously incorrect a formula, without any attempt to check it by an analysis of the original.

There is but one item in Mr. E. Smith's analysis at which I hesitate; and this I venture to do, because I do not discover that he himself speaks quite decisively upon the point. I allude to the proportion of dilute hydrocyanic acid, which he states as greater than my own observations would have led me to expect, and greater, I think, than has generally been supposed. And since this, next after morphia, is the most important ingredient in chlorodyne, it becomes a matter of first importance to be thoroughly assured upon this head. If Mr. Smith would add to our obligation to him already incurred, by giving us a distinct assurance with respect to this ingredient, his formula (with the addition, may I say, of a little caramel?) will, in all probability, become the standard of chlorodyne throughout the British realm.

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* May not the fact, that the pupil is contracted during sleep, that it expands beyond its normal size immediately upon awaking, and then oscillates to and fro till it finally assumes the diameter proper to the light to which it happens to be exposed, point to some physiological condition, which would explain the behaviour of the pupils described by Dr. Dowse, without calling in the help of belladonna?

† *Indian hemp.* Soon after the introduction of the formula for preparing chlorodyne, being actuated, moreover, by some curiosity to experience the effect of the redoubtable "haschish," I determined to try upon myself graduated doses of the drug. Beginning with four grains of the extract, and experiencing no sensible effects, I increased the dose next time to six grains, then to eight grains, but cannot say that I experienced appreciable results of any kind; certainly not of the kind I was seeking. It would seem probable that there is the same *kind* of difference, and perhaps even a greater *degree* of difference, between the artificial extract of hemp and the natural exudation, "bhang" or "haschish," as there is between extract of poppies and opium.

We may consider that, subject to Mr. E. Smith's final verdict on the proportion of hydrocyanic acid, the problem of the composition of Dr. Browne's Chlorodyne is now finally solved; and no hysterical protestations that *my* "Chlorodyne never contracts the pupil," and *therefore* does not contain morphia, will any longer avail. We have ascertained with positive certainty that there are present in it only three ingredients of an active character, viz. morphia, hydrocyanic acid, and chloroform; and the last of these, of which only 2⅓ minims are contained in a 30-drop dose (=20 minims) of chlorodyne, is so homœopathic in quantity, and so evanescent in quality, that it may properly be remitted to the other "adornments," leaving only the first two as the possibly operative forces.

Hydrocyanic Acid. If Mr. Smith should confirm his first analysis, each 30 drops of chlorodyne will contain 2⅓ minims of this ingredient also; a very allowable quantity in itself, while, in event of the dose of chlorodyne ascending by easy steps to double, or even quadruple its original quantity, the system would readily become tolerant of the increased doses. But the effects of this acid, like those of chloroform, although in a less degree, are comparatively transient, and would be wholly exhausted by the time the effects of the morphia had fully developed themselves. If it be considered an advantage that the hydrocyanic acid should fill up, by its more instant, but early perishable effects, the interval which the morphia requires to mount to its effective level, then, and so far, hydrocyanic acid is a valuable adjunct to chlorodyne. But, in the vast majority of cases, no such instant effect is required, and half an hour may very easily be allowed before the influence of the medicine need attain its maximum; in all such cases the presence of the acid is, at the least, indifferent, even if it be not positively an impertinent intrusion. From all of which premises I infer that hydrocyanic acid, unless in some rare and special cases, is quite superfluous as an ingredient in chlorodyne, and contributes nothing to the more permanent and beneficent action of that remedy.

The influence of chloroform and hydrocyanic acid having been eliminated as practically = 0, there remains nothing to which the efficacy of chlorodyne can be ascribed but the morphia.—Q. E. D.

Morphia. The real question which has been in dispute is, not whether Dr. Browne's Chlorodyne contains morphia,—for this (Dr. Browne's insinuation to the contrary notwithstanding) no sensible man has doubted,—but how much of the effects of his Chlorodyne are due to this alkaloid? Shall we say one-half, or three-fourths, or nine-tenths, or the whole? Such is the question which I have really designed to raise; I myself maintaining, that certainly at least nine-tenths, more probably the whole, of any effects produced by normal doses of chlorodyne are due exclusively to morphia. Nothing can be easier of proof. The test is in the hands of every practitioner who has been accustomed to prescribe chlorodyne. Let him only prescribe instead, an equivalent dose of a chlorodyne of his own preparation, containing, besides morphia, only the usual adornments of mint, capsicum, and just enough chloroform for flavour, with treacle, etc., for the vehicle, but no hydrocyanic acid, and the question will speedily be decided, to his conviction, at least, if not to his satisfaction. For one does *not* like to see a friend, whose virtues one has extravagantly vaunted, proved to be no better than his neighbours,—shown up, in fact, as a bit of a humbug. How the makers of chlorodyne must laugh in their sleeves at the—shall we call it?—*ingenua fides* of their medical patrons! who, seduced by the happily-chosen name (chlor-*oform* + *an*-odyne = chlor-odyne), have accepted a disguised solution of morphia as the grand Panacea, and, now that the disguise is being stripped off, seem afraid to scrutinize the false pretences of their idol. Yet not altogether false; since many a practitioner has administered chlorodyne, and with the happiest results, who would have been deterred, through bookish and traditional prejudices,[*] from exhibiting morphia. This I hold to have been the great benefit of chlorodyne,—that in thousands of cases morphia has been given under the designation of chlorodyne, when precept and practice would have forbidden its use under its true name.

Do I then condemn chlorodyne as a preparation, or object to its use? Neither. On the contrary, I regard it as a most eligible form of a liquor morphiæ co.,[†] and am inclined to think that the introduction of a comparatively safe and manageable anodyne, in the shape of a proprietary medicine, has been of service to the public. I do not quarrel with chlorodyne for what it is, but for professing to be what it is not. I have aimed to put it on its right footing and in its right place; and, by laying bare the truth, to dissipate delusions as to any magical or occult virtues,—*ignotum pro mirabili*,—or as to any claim to intrinsic superiority over plain morphia, with which so many of its patrons have injudiciously accredited it.

A FORMULA FOR CHLORODYNE.

BY F. STOCKMAN.

Sir,—Some nine or ten years ago, before chlorodyne had become such a favourite remedial agent, a recipe for making it was given me by a dispenser, who stated to me that it was given to the medical officer of his department by a person who could be relied upon. In looking through the Journal this month, I find that Dr. Ogden's (Royle) is almost identical with mine, a copy of which I forward. I find nearly all the recipes for chlorodyne contain ol. menth. pip. I am of opinion that the smell *similar* to peppermint is produced by the action of the perchloric acid upon the chloroform, and that Browne's chlorodyne does *not* contain mint, and I also am of opinion that it *does* contain tincture of Indian hemp, which produces the green coloration Mr. Smith alludes to. I find in making chlorodyne a great deal depends upon the colour and thickness of the theriaca used, some being much darker and thicker than other sorts used.

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[*] *Bookish and traditional prejudices.* For instance, it is a popular delusion that opium-eaters are short-lived. Yet the arch-opiophagist, De Quincey, who consumed at one period the enormous quantity of four hundred grains per diem, lived to seventy-eight. It is another delusion that they are generally poor, sickly, attenuated creatures; yet out of some scores of opium-eaters whom I have known, I have known only two whose appearance realised the popular notion; and both of these took opium,—one, two ounces in a fortnight, the other, half a dram in two days, to alleviate diseases that were slowly killing them, and which ultimately did kill them. To another delusion, viz. that opium induces a beatific condition of the faculties, De Quincey himself has unintentionally contributed, as *e. g.* when he speaks of it as "a panacea, a *φάρμακον νηπενθὲς*, for all human woes; the secret of happiness at once discovered; happiness might now be bought for a penny, and peace of mind could be sent down by the rail," etc. Such instances, however, are comparatively rare, and a state of pleasant calm is the utmost that the majority of persons ever attain to. On the other hand, the fearful reactions of which De Quincey writes, the purgatory which avenges the preceding fools' paradise, are equally rare. I have only known one such case, viz. that of the man to whom I have referred as taking two ounces in a fortnight; and in him the awful dream-faculty, which De Quincey shadows forth with such majesty and pathos, was strongly developed,—so much so, that when I began to question him upon the subject, he recoiled a step, as though a blow had been aimed at him. Another fallacy is, that in order to sustain the same effect, the dose of opium requires perpetually to be increased. On the contrary, the dose is often retrograde; with the majority, stationary; and in only a few cases, and in these I incline to believe only for a time, is it advancing.

But the enumeration and exposure of the prejudices and delusions which surround the whole subject of the mysteries of opium would fill a pamphlet. It is as true now, as when De Quincey first wrote the words, that "upon all that has been hitherto written on the subject of opium, whether by travellers in the East, or by professors of medicine, writing *ex cathedrâ*, I have but one emphatic criticism to pronounce—Nonsense!"

[†] *Liquor morphiæ co.* Not that I mean to offer this as the pharmaceutical title of chlorodyne; though, as morphia plays the chief part in the composition, it would be both a suitable and precise designation. But the root chloro- is now so inextricably associated with this preparation, that the name liq. chloromorphiæ comp., as proposed by Mr. E. Smith, is probably the very best that could be adopted.

℞	Chloroformi	ʒiv
	Sp. Vin. Rect.	ʒij
	Morph. Hydrochlor.. . . .	gr. viij
	Acidi Perchlor.	gtt. x
	Tinct. Capsici	ʒss
	Tinct. Cannabis Ind. . .	ʒi
	Acid. Hydrocyan. (Scheele's)	gtt. xij
	Theriacæ	ʒi.

Landport, January 11, 1869.

PROFESSOR TYNDALL ON DUST AND HAZE.

The Friday-evening lecture season at the Royal Institution commenced on the 21st of January, with a lecture by Professor Tyndall on "Dust and Haze." The chair was taken by the President, Sir Henry Holland, who was supported, not only by the *élite* of the scientific world, but also by many other distinguished men, including the Right Hon. W. E. Gladstone, Earl Granville, Sir Edwin Landseer, and the Dean of Westminster.

The lecturer commenced by referring to the fact that a sunbeam, passing through a darkened chamber, reveals the existence of certain particles floating in the air. This phenomenon he was unable to show his audience, since he had not at his command a ray of solar light; but in the electric light he had a "domestic sun," by the aid of which he could demonstrate the presence of this dust in the atmosphere of the lecture theatre. Some time ago he had occasion to make experiments upon the action of light on vapours, when this air-dust was found to cause so much annoyance that it became necessary to remove it. The air was passed over sulphuric acid and caustic potash, with a view of freeing it from aqueous vapour, and carbonic acid, but these operations failed to free it from the dust. Various methods of getting rid of it were tried, but they all failed, until at last the lecturer somewhat unexpectedly found that the atmosphere could be deprived of the floating particles by allowing it to pass over the tip of a spirit-lamp flame before it entered his experimental apparatus. This indicated that the particles were combustible and organic. A more efficient means of burning the dust was therefore fitted up. A platinum tube, containing platinum-gauze, was intensely heated, and through this air was allowed slowly to stream: under these circumstances the dust was entirely removed. But it might, perhaps, have been merely mechanically retained by this gauze; the experiment was accordingly repeated after the tube had been allowed to cool. Now, however, no separation of the particles was effected; the dust, therefore, was destroyed solely by the action of the heat. The lecturer mentioned that he had attempted to burn the particles in the focus of a concave mirror, but he was unsuccessful. A spirit-lamp flame was, as he had stated, capable of causing their combustion, but on placing such a flame beneath a beam of light a most curious effect was observed. Wreaths of darkness, resembling the blackest smoke, became visible in the luminous ray; and, on substituting for the spirit-lamp a large Bunsen burner, a sharply-defined gap was made in the beam. Is this darkness smoke? The question was decided when it was found that a red-hot iron, or a hydrogen flame, produced the same phenomenon, for here there could be no smoke. This darkness, then, said the lecturer, is the darkness of the stellar space; it is owing to the fact that, in the air thus deprived by burning of the floating particles, there is nothing to disperse the light. It is not, however, always necessary to burn the air. A heated copper sphere caused, in common with flame, these wreaths of darkness, but it produced them, although to a less degree, after it had cooled below the temperature of boiling water. A flask of boiling water was also, to some extent, productive of them; and again, a platinum wire, heated by electricity, gave a similar result long before it reached the temperature of ignition. Now, how could this be accounted for? In the following manner, said the lecturer:—The air in contact with the heated platinum wire, or copper globe, or flask of boiling water, has its temperature raised; it becomes specifically lighter than the surrounding air, and it rises up, and leaves behind it the dust which is not sensibly altered in gravity. Various gases, such as hydrogen, prepared so as to exclude the floating particles, produce darkness when placed in the track of a ray of light. A glass shade, held in the air mouth downwards, allowed the light from the electric lamp to pass through it in the form of a visible beam; but when hydrogen or coal-gas was admitted into the shade by means of a tube passing to the top, that portion of the luminous ray which was within the glass could no longer be seen.

Professor Tyndall then proceeded to observe that some portion of this atmospheric dust is noxious to human life, and so passed on to the consideration of the germ theory of disease. In the treatment of this subject no new facts or theories were adduced, and it is probably not saying too much to state that the lecture would have been at least as successful had this disquisition on a subject so essentially medical been omitted.

This air-dust, said the Professor, cannot be blown away with bellows, and when we replace the bellows by the human lungs we simply get a white cloud in the ray of light caused by the aqueous vapour in the breath. If, however, the breath be previously dried, as, for instance, by exhaling through a heated tube, we obtain a somewhat interesting result. On filling the lungs, and slowly breathing through the tube into the light ray, we at first get no effect, or practically none; but, as the last portions of air are expelled, and pass into the beam, we obtain the dark wreaths, indicating that the dust has been removed from this part of the air and retained by the lungs. Again, if we fill our lungs with air filtered through cotton wool, we find, on exhaling, that the whole of the air has been by this medium freed from floating particles. This, said the lecturer, accounted for medical men, "more, perhaps, from instinct than from knowledge," placing their handkerchiefs to their faces on entering an infected atmosphere. That all germs of disease can be intercepted by a filter of cotton wool, and that we can thus, as regards germs, bring into our rooms the air of the Alps, the lecturer was so strongly convinced that he would willingly test, in his own person, the truth of the statement.

Beyond the means of illustrating to a large audience, there was little new in Professor Tyndall's discourse; and of that which was novel, it may be remarked that the theory propounded to account for the removal from the air of dust by bodies at a temperature below that of ignition is hardly so satisfactory as might be desired. The rising of air from a hot body is a continuous process.

Now, if we admit that the air in rising leaves behind it the floating particles, it follows that such an accumulation of these particles must occur that there ought to be no difficulty in demonstrating their existence in unusual number in the air coming up to take the place of that removed by rarefaction.

OLDHAM COUNTY COURT.

Friday, Dec. 24.

(Before C. TEMPLE, Esq., Judge.)

THE PHARMACEUTICAL SOCIETY *v.* MARWOOD.

A case of some interest and novelty came on for hearing, in which "the Pharmaceutical Society of Great Britain, by Elias Bremridge, their secretary, by the authority of the Council of the said Society, sought to impose a penalty of £5 upon James Marwood, medical botanist, Rochdale Road. The sum named was set forth in the plaint as the "amount of penalty incurred by the plaintiff for, prior to the date hereof, taking, using, or exhibiting the name of 'registered chemist and druggist,' contrary to the provisions of the 15th section of the Pharmacy Act, 1868 (31 & 32 Vict. c. 121)."

Mr. Flux, of the firm of *Flux*, *Argles*, and *Rawlins*, London, appeared in support of the summons.

Mr. C. E. Blackburne appeared for the defendant.

In opening the case, *Mr. Flux* said it was expressly brought under the jurisdiction of this Court, for under the Chemists' Act penalties were made recoverable in the same manner as under the Pharmacy Act, which appeared in an earlier part of the book before his Honour.

His Honour.—What is the penalty?

Mr. Flux.—Five pounds, which is sued for in the manner pointed out by the statutes, and it has been incurred under the statute now before your Honour.

His Honour.—It would have been much more satisfactory for me, if it is on a question of general law, if it had been sued for in one of the Superior Courts.

Mr. Flux.—There are precedents as respects penalties under the Pharmacy Act, and I have brought one with me. This statute expressly throws me on the County Court, and I cannot go to a higher court.

His Honour.—Where is the clause of the statute you refer to?

Mr. Flux.—Clause 15 I will point your Honour to.

His Honour (reading).—"From and after the 31st December, 1868, any person who shall sell or keep an open shop for the retailing, dispensing, or compounding poisons, or who shall take, use, or exhibit the name or title of chemist and druggist, or chemist, or druggist, not being a registered pharmaceutical chemist or chemist and druggist, or who shall take, use, or exhibit the name or title, pharmaceutical chemist, pharmaceutist, or pharmacist, not being a pharmaceutical chemist . . . shall, for every such offence, be liable to pay a penalty or sum of £5, and the same may be sued for, recovered, and dealt with in the manner provided by the Pharmacy Act for the recovery of penalties under that Act."

Mr. Flux.—Now, earlier on in that book you will find the Pharmacy Act. At page 13 you will find sect. 12, which says, "such penalty may be recovered in the name and by the authority of the Council of the said Society . . . by plaint under the provisions of any Act in force for the more easy recovery of small debts and demands." That, I submit, places the question of jurisdiction very clear before your Honour.

His Honour.—In point of fact, has there been any conviction under the Chemists' Act?

Mr. Flux.—Not under the Chemists' Act, but under the Pharmacy Act penalties have been recovered in the County Courts. I have with me the proceedings in one case.

His Honour.—Well, but has that decision, or the assumption of that jurisdiction, been recognized by the Courts above? Was it ever appealed against or objected to?

Mr. Flux.—By no means. It has never been called in question either by any court or by any party in the case, and I submit that the words are quite distinct that the penalties are to be recovered according to the Small Debts Act; that is, under the Act for the Recovery of Small Debts, and the jurisdiction is thrown here so completely that there is no mistaking it.

Mr. Blackburne.—It says "may be recovered."

His Honour.—I think there is sufficient for me to entertain the jurisdiction, but if you wish, on the part of the defendant (as there has been no decision by the Court above upon these cases, as relates to this Act), to carry it to the Court above, I shall give you the opportunity of making the application to the Court above of trying whether it is the duty of the County Court to decide it.

Mr. Blackburne.—I am sorry to say that my client is not in a position to go to so much expense. With regard to the jurisdiction, I may state that we raise no question as to the jurisdiction of this Court.

Mr. Flux.—Then the case must be tried on its merits, and I ask you to record an admission which the defendant has promised to give.

His Honour.—I cannot do that. He stands here as an accused man under a penal statute. He has a right to avail himself of any protection he requires; he cannot, in fact, bind himself not to take the full possession of his rights under the Act of Parliament.

Mr. Flux.—Precisely so. The defendant's attorney, I am sure, will redeem that which is under his hand and in my possession.

His Honour.—I shall not take any admission which the defendant may withdraw. The question is, does he make an admission now? or else we have nothing to try. If he makes an admission now, you may take judgment.

Mr. Flux.—He does not go the length of saying that his admission necessarily imports a verdict against him, but he admits a fact, and I shall ask you after recording this, to turn your attention to other facts. It was made to save the time of the Court and costs. The admission I refer to is as to the defendant using the title "chemist and druggist."

His Honour.—You must prove it. So far as you are concerned I cannot use an admission of this kind against a man. One of your charges is that he carries on the trade of chemist and druggist, and the allegation is that he has that printed or set forth on his shop door. That is in the nature of a criminal case, and under such circumstances I cannot call upon him to make any admission. Is it a necessary part of this case to prove that he prints himself a chemist upon his door-post?

Mr. Flux.—Not upon his door post, but (producing a copy of the 'Chronicle') he advertises it. I submit to your Honour that we put it to him.

His Honour.—I shall not have it put to him. If it is a case capable of proof, I shall adjourn the case for you to make it.

Mr. Flux.—It would be quite practicable for me to subpœna a witness who is in the town and could prove it. I mean the publisher of the newspaper.

His Honour.—I will have the proof here. I will not proceed on an extorted admission. (To Mr. Blackburne).—Do you make the admission now?

Mr. Blackburne.—We admit that we have used the title, and we hold that we are justified in using it.

His Honour.—Very well. (To the defendant.) Is that so?

Defendant.—Yes, sir.

Mr. Flux.—In this case.

His Honour.—Who is prosecutor?

Mr. Flux.—Practically, the Society. The penalty when recovered—

His Honour.—You constitute yourselves the representatives of the public.

Mr. Flux.—No, sir. Parliament has cast this duty upon those whom I have the honour to represent, and her Majesty's secretary.

His Honour.—Is the penalty given to the informer?

Mr. Flux.—No.

His Honour.—Then to whom?

Mr. Flux.—To her Majesty's Government.

His Honour.—Well, the Attorney-General must undertake the prosecution.

Mr. Flux.—No, your Honour. Parliament has cast it upon the body I represent, on the Pharmaceutical Society of Great Britain.

His Honour.—I must have some person coming here with authority. I will not have a person standing up and saying he represents some society, and that they wish a penal statute to be enforced against a man.

Mr Flux.—I can well understand your Honour. At all times actions for penalties are opposed to the feelings of an English gentleman; but the recovery of these penalties is cast upon the parties I have the honour to represent, and the reluctance they have in this matter is shown by the very lengthy correspondence I have in my hands.

His Honour.—But an individual cannot sue except the penalty is given to a common informer.

Mr. Flux.—If your Honour so rules, I am satisfied you will give me the opportunity which a short time ago you offered to my friend on the opposite side.

His Honour.—What was that?

Mr. Flux.—The opportunity of submitting the point to that court which your Honour at first thought should be the one to take prior cognizance of this case.

His Honour.—Yes.

Mr. Flux.—But it is my duty also to point out—

His Honour.—But I have great doubts of any right you have, as an individual, to sue. It is not given in the Act of Parliament, and therefore I am inclined to nonsuit you. You must apply to the Court of Queen's Bench to make an order for me to proceed with the case, seeing that I have doubts of the jurisdiction, that I am against the right of an individual to sue, and the Court of Queen's Bench would have, as the general superintendent of the legislature of the country, to order me to proceed. If you get an order, I will throw nothing in your way. I only say that my duty is, as there is no person to whom power is given to recover these penalties, not to the informer, or anything of that kind, that nobody can sue for them but her Majesty's Government, her Majesty herself, and it must be in her name. Therefore I cannot proceed to charge this man with penalties in such a case.

Mr. Flux.—The words of your Honour would apply with the utmost force to an ordinary case, but I must submit to your Honour that this Act of Parliament has cast upon those whom I represent, not only this duty of suing for penalties, but the great principle of their duty is incident to the protection of the public, as detailed in this Act of Parliament.

His Honour.—I would rather you stated this to the Court above, which has authority to order me to proceed, and I will willingly proceed under their authority, when you have obtained it.

Mr. Flux.—The recognition of this body as having statutory power has already been established by the Court of Queen's Bench, but not on this particular point.

His Honour.—My point is this: here is a penalty imposed on an individual under a particular Act, but there is nobody entitled to sue for it by the Act imposing that penalty, and therefore it must become due to the Crown, and must be sued for by authority of the Crown, and until I am clear upon the matter I will not proceed with the case.

Mr. Flux.—I should not discharge my duty to the Court, or those whom I represent, if I did not call your Honour's very particular attention to the statute. At the head of p. 13 of that book, Pharmacy Act, June 30, 1832, c. 16, s. 12, already quoted, which is the property of the Court, sent for the Court's information by one of her Majesty's departments—

His Honour.—It is an Act of Parliament. Where it comes from does not make one farthing's difference to me. It has been passed by the legislature, and, as a matter of course, is, like all other Acts of Parliament, sent for the use of a public Court.

Mr. Flux.—Yes. The law of the land is this. Penalties are to be sued for as shown by this clause here (sect. 13, Pharmacy Act), which I respectfully point to your Honour's attention.

His Honour.—But, however, time can be of no consequence in this case; and I don't wish to be taken by surprise in a case which appears to me to be worthy of great consideration, and therefore I wish it to stand over to the next Court, and if you will furnish me with the Acts of Parliament, I shall go into the matter.

Mr. Flux.—In anticipation of this I did my utmost to get the case so prepared that it might come before you with as little preliminary trouble as possible, and if, after hearing me, your Honour should consider it a matter of propriety or convenience to defer the judgment of the Court, I have only respectfully to bow.

His Honour.—I will tell you what I will do in this case. It is a very serious thing if it is to be carried out in this way; and, considering what is due to the public, I think I am justified in saying I cannot hear this case until either you produce me the authority of the Attorney-General, or you make some application and lay the case before him, and get his opinion, and then I will bow to that opinion when it is here.

Mr. Flux.—Do you mean upon the question of jurisdiction, or the merits of the case?

His Honour.—I have nothing to do with the merits of the case at present. My impression is that you have no right to sue. If you produce the opinion of the Attorney-General that the plaintiff in this case has a right to sue, I will believe that to be the case. I can either communicate with the Attorney-General myself, or you can do so and produce me his authority. It can be of no consequence whether it is decided this day or this day six months.

Mr. Flux.—There is this. This Act was passed for the protection of the public in the sale of poisons. If this gentleman is right, if he may call himself a chemist and druggist, then it comes before the public that he is licensed as one,—under statute authority, licensed to compound and sell poisons.

His Honour.—Will you let the case stand over till you apply to the Attorney-General and take his opinion, on the part of the Pharmaceutical Society, whether they have a right to bring this case into this Court, and I will be bound by it?

Mr. Flux.—I venture to submit that a very long course of the—

His Honour.—I will not hear it. I put you to the trouble of getting an order.

Mr. Flux.—I have the proceedings ten years ago, under the Pharmacy Act—

His Honour.—No. This Act only passed last session. It has only just been passed, and I am of opinion that I ought not to entertain this case. There is no special provision under the Act of Parliament, as I read it, naming anybody to recover the penalty, and my opinion is that where there is no direction for an informer as an individual to put himself in the position of plaintiff, it can only be brought into Court by her Majesty's Attorney-General. That is my opinion.

Mr. Flux.—Will your Honour do me the favour of deciding upon the point, so that I can at once bring judicial opinion to bear on the subject?

His Honour.—No. If you compel me to hear it now, I shall very likely adjourn further argument to the next Court, and I will not decide it until I have sent the case to the Attorney-General, and you are bound to do that. I am placed in the situation of having the first case under a newly-passed Act of Parliament brought before me. There is no instance of such a charge ever being instituted before, and my opinion is that you should have the sanction of the Attorney-General (in what way you will get it I don't know); but my opinion is that you require the sanction of her Majesty's Government in proceeding under this statute. I adjourn it.

Mr. Flux.—Will you hear the evidence? I have got witnesses here to-day.

His Honour.—You have chosen to travel from London to Oldham. You had the Courts at hand there.

Mr. Flux.—I have done so because the proper Court to appeal to is that having jurisdiction in the district where the defendant resides.

His Honour.—I declare my judgment in this case to be that you cannot proceed for the recovery of the penalty on behalf of the Pharmaceutical Society without the authority of her Majesty's Government, and the case must stand over on my calling upon you to produce that authority.

Mr. Flux.—Does your Honour say I am required to produce the fiat of her Majesty's Attorney-General distinctly authorizing this action?

His Honour.—If you will show me the authority of the Attorney-General, I will be bound by it at once. So far as I can see, you must produce that authority, because, according to my opinion of law, nobody can sue for a penalty where there is no authority given to anybody to act as an informer without the permission of the Attorney-General. You can ask him if he gives his consent for my hearing the case, which he can do if he likes; or if he thinks it ought to be done in any particular way. I will do all I can to help you; but I cannot entertain it now, because my decision either one way or the other might be of no consequence in the world. Besides that, it is only the common courtesy which I think every Court is entitled to when a general question of law has to be tried that has nothing to do with any particular locality, but which will affect the whole kingdom, that it should at all events be brought under the notice of the higher Courts; and I don't choose to take any proceedings in the matter until I have the authority or sanction of the Attorney-General.

Mr. Flux.—Your Honour, then, adjourns the case to the next court?

His Honour.—I shall adjourn it to the next Court for the purpose of the plaintiff showing proper authority, legal authority, for me to proceed. My opinion is that you require the sanction of the Attorney-General to bring this action.

Mr. Blackburne.—Ought not the plaintiff on this occasion to be nonsuited?

His Honour.—No; I will not do that; because I admit there may be great doubt in it, and I do not want to throw the least obstruction in the way of what may be a general benefit; but I do not want to take a leap in the dark.

Mr. Flux.—Possibly I shall best serve the interests of justice, if I lay a case before her Majesty's Attorney-General.

His Honour.—All I wish you to do out of consideration for me is to say that, in my opinion, I cannot go on without the authority of somebody on the part of the Crown sanctioning this action. I do not know in what way that can be done, but I am perfectly willing to obey what I consider a legal direction. If the Attorney-General says an action in your name is in his opinion proper, as a law officer of the Crown he may order me to hear the case. I do not know what particular course you must adopt for this purpose, but there is one. I will not throw any obstacle in your way, but I do not want to be drawn into a discussion, as I do not know what might be the consequences. I take it to be general law that where a penalty is imposed for doing a particular act, and no informer has power given him by Act of Parliament to recover such penalty, it is only recoverable by the Crown.

The case was then adjourned, in order that the plaintiff might obtain the sanction of the Attorney-General.—*Law Times, Jan.* 1, 1870.

CONVICTION UNDER THE PHARMACY ACT, 1868.

Mr. Edward M'Call, of No. 1, Little St. Andrew Street, Seven Dials, was summoned before Mr. Knox, at the Marlborough Street Police Court, for two offences under the 17th section of the "Pharmacy Act;" 1st, for having dispensed a medicine containing poison without complying with the provisions of the Act; and, 2nd, for having sold oxalic acid without affixing the name of the article, and the name and address of the seller to it.

The case was first brought before the magistrate on the 31st of December last, but as the defendant was then unable to attend, it was not gone into further than to give some formal evidence to prove that the articles sold contained poison. This evidence was given by Professor Attfield, who stated that on the 20th of December he was asked by Mr. Bremridge, the Secretary and Registrar of the Pharmaceutical Society, to examine the contents of a bottle, and by Inspector Brennan, of the Metropolitan police, to examine a small packet of crystals, marked "poison," which he now produced. He did so, and found it to consist of "oxalic acid."

Mr. Knox marked the packet with the letter A.

Professor Attfield continued, that on the 24th of December he examined the liquid supplied to him in a bottle by Mr. Bremridge, and he found that it contained the poison strychnine.

The bottle was put in, and Mr. Knox marked it B.

The case was then adjourned to January 7th, 1870.

Mr. Flux said he had been instructed by the Pharmaceutical Society to conduct these cases, because, they being the first under the recent statute, it was considered desirable that they should be laid properly before his Worship. Both cases were under the 17th section of the statute, which was probably familiar to his Worship, but if not he would read it.

Mr. Knox said that, when the applications were made for the summonses, as it was a special matter, he went into it with considerable attention, and therefore Mr. Flux need not trouble himself with reading the Section.

Mr. Flux said he would first take the summons for unlawfully dispensing.

Mr. Elias Bremridge, of 17, Bloomsbury Square, was then sworn. He stated, that on the 9th of December last, he attended at the shop of the defendant, No. 1, Little St. Andrew Street, Seven Dials, and presented a prescription to be dispensed, and that it was dispensed, and he received the bottle B, the prescription he now produced. The mixture as he received it was handed to Professor Attfield for examination, as detailed on the last examination. The defendant did not know his (prosecutor's) name nor address; neither name nor address was on the prescription. He was not aware that the defendant made any entry regarding it. He did not find the defendant's name on the Register of Chemists and Druggists, and, therefore, he could say he was not so qualified.

Mr. Beard said the defendant was not charged with that.

Cross-examined by *Mr. Beard*.—Is this the kind of book (producing one) the chemists and druggists use for the purpose of making entries of the sale of poisons?

Mr. Bremridge.—No, and, moreover, the name and address of the vendor was not on the bottle.

You never knew an instance of an accidental omission to make an entry, I suppose?

In this case I must say I do not believe it is an accidental omission, because I have found that the defendant has been systematically sending out poisons without putting his name and address on them.

He appears to have labelled them "Poison."

That is not sufficient.

Have you known Mr. M'Call long?

I have never known Mr. M'Call.

Have you ever had any application from him?

I never had any application from him at all that I am aware of.

Mr. Flux.—Does Mr. Beard raise any question as to the defendant being the proprietor of the shop?

Mr. Beard.—No.

Mr. Knox.—Then, that being admitted, the whole case is proved, except as to his being a Chemist and Druggist or not.

Mr. Flux said, if he were, he must still make an entry with regard to the dispensing of a medicine containing poison, and so make it in a book to be kept by him for the purpose of entering medicines dispensed.

Mr. Beard said it was quite true his client was not a Chemist and Druggist, but he had applied to be examined, and was perfectly competent, having been in the medical profession twenty-five years, although he had only recently been in business as a chemist. The best proof which could be shown of the *bona fides* of his client was the production of the book, which he now begged to show to the magistrate, which contained entries from time to time of the sale of different poisonous articles, which were specified by name as required by the statute. As he had before said, he was not cognizant of having been guilty of any neglect; but it turned out that in this particular instance he had omitted to make the entry required of the name and address of the party. He could only say he very much regretted having done so, and he could have had no motive for making it whatever. There was hardly any profit attached to it, and there could be no motive whatever for excluding the entry. It was one of those unfortunate things that would occur sometimes in the hurry of business, or from some other accidental cause. Mr. M'Call was very sorry to have in any way infringed the statute, which he was not at all desirous of doing, and he ventured to think under the circumstances that his Worship would come to the conclusion that it was done without any wrong intention, and, that, therefore, the infliction of a mere nominal penalty would satisfy the justice of the case, and he could only say further on his behalf, that every care would be taken that nothing of the sort should occur again.

Mr. Knox said he had better hear the other summons before giving his decision.

Henry Haines, 185 E., was then sworn, and stated that on the 17th of December, 1869, he attended at the shop of the defendant and purchased the article now produced (namely, the packet of oxalic acid deposed to by Dr. Attfield on the previous occasion, and marked A. by the magistrate).

Mr. Beard declined to cross-examine the witness, and stated that the charge in this summons was for not putting the name and address of the vendor on the article. It was labelled "poison," as his Worship would perceive. He then handed up three or four specimens of poison labels in use by the defendant, some of which contained a blank space on which the name could be put, whilst others did not, and he said that unfortunately the defendant had been using some of the old labels which he had in stock previously to the passing of the Act and which had led to his committing this offence.

Mr. Flux said he was not there to press for a very heavy punishment on this defendant, but rather for the purpose of laying before the Court and the public, as far as it could be done, the provisions of the Act of Parliament, and the necessity which existed for their being complied with. Here there was the case of a sale of strychnine in the bottle of medicine, and in the other case the sale of oxalic acid. He was informed that the accused had sold for a few pence enough to poison 100 people.

Mr. Knox said it appeared to him that the sale of oxalic acid was far more dangerous in the hands it was likely to fall into than that of the medicine containing the strychnine.

Mr. Flux said, this occurred in a neighbourhood where at least the poor people resident thereabouts were entitled to all the protection which the statute sought to provide for them, and he could not quite acquit the defendant of being altogether innocent in the matter, because he found that, knowing himself not to be a duly registered person, he took care not to call himself, on the exterior of his shop, a chemist and druggist, but to call the place a "Medical Hall," and also took the precaution not to disclose his name. In neither of these instances was the name disclosed, and it so happened that the prosecutors had to arrange for a third instance of a sale by the defendant in order to get at his name and address. He thought, therefore, that the appearances were somewhat against the accused; but, as he had said, he was not there for vindictive purposes, but simply for the administration of justice.

Mr. Beard said he was much obliged to Mr. Flux, but he thought he would take it for granted that, on the occasion of the third sale, the defendant did act in accordance with the statute, and disclosed his name and address. There was no motive for the name not appearing over the door.

Mr. Knox.—I can only say that I consider cases of this description very serious indeed, and I must say I think we who are now discussing the matter here are much less likely to be injured than the poor people who live about Seven Dials. What are the penalties under the Act of Parliament?

Mr. Flux.—For the first offence a fine not exceeding £5, for the second £10. There are two offences here, but on the present occasion I do not press the second as a separate offence. I would rather withdraw one summons than that the defendant should be subjected to the £10 penalty.

Mr. Knox.—I will permit you to withdraw the second summons. I think the man has certainly been guilty of something much more than negligence, habitual negligence. I think the defendant in this case has been guilty of habitual carelessness as to the entering and vending of these deadly matters, but, as you tell me you are not anxious to press for the full penalties, I shall impose a fine of 40s., and whatever costs have been incurred in the case. For the future I am perfectly prepared to put the Act in force to its full extent, so dangerous is it to the public that these articles should be sold improperly.

THE SALE OF LAUDANUM.

On Monday, January 3rd, Mr. Taylor, the Bolton coroner, held an inquest on the body of a blacksmith, named William Whalley, who had, while in a state of excitement, produced by indulgence in drink, taken six drachms of laudanum. The deceased went to the shop of Mr. Walter Ainscow, chemist, Deansgate, on the afternoon of Friday, and asked for fourpenny-worth of laudanum. Mr. Ainscow sold it, cautioning the deceased that ten or twelve drops was a large enough dose. When the deceased got home he drank the contents of the bottle, which was duly labelled "poison," and then went to sleep. He died at half-past five o'clock the following morning. The druggist admitted that, though a registered druggist, he did not make an entry of the sale, and he sold the poison to the man without any witness being present. The coroner referred him to the 31 & 32 Vict. c. 21, s. 17, which makes it unlawful to sell preparations of opium without duly entering the same in a book, and expressed an opinion that this was one of the class of poisons which it was intended should not be sold without a person being present as a witness, or the purchaser himself being known to the vendor. The penalty for the infraction of the Act was £5 for the first and £10 for the second offence. He also quoted the 138th section of the "Bolton Improvement Act, 1854," which renders any person liable to a fine of £5 for selling any virulent poison to any person except in the presence of a witness, the name of the purchaser and the witness to be at the same time entered in a book kept for that purpose. The coroner, while telling the jury that they had no power to make the druggist in this case criminally responsible, said he hoped the public prosecutor would take the matter up.—*Manchester Guardian.*

Mr. F. B. Beager, Honorary Secretary to the Manchester Chemists' Association, writing to the '*Manchester Guardian*,' very properly says, with reference to this case,—

"The fact is, neither registration of the sale nor witness even is required in the case of laudanum or other preparation of opium, only that the bottle be labelled "poison." Mr. Ainscow more than fulfilled the requirements of the law; he gave his customer advice as to the proper dose, which, unfortunately, was not followed.

"In the 31 & 32 Victoria, c. 121, the list of poisons scheduled is divided into two parts; the first contains those which are to be registered in a book when sold, and the second those which must be labelled 'poison.' This apparently simple arrangement seems too much for the comprehension of some coroners and county magistrates."

And Mr. Halliday, of Manchester, writing to the 'Examiner and Times,' says,—"A few days ago, at an inquest in the same town, syrup of squills was declared a poison."

SHEEP DIPPING COMPOSITION.—ACTION FOR DAMAGES.

A case of considerable importance has been brought before the County Court at Williton, Somerset. A farmer named Pile sued one William Crocombe to recover £50, part of certain damages sustained by the improper and unskilful use of a preparation used by him in dipping plaintiff's flock of over six hundred sheep. Plaintiff proved that his sheep were dipped by defendant on the 25th of August last, and two days afterwards seventy of the sheep were found dead, and within a week two hundred died. Defendant refused to make any compensation, and suggested that the plaintiff caused the disaster by adding a certain quantity of powder to the wash without defendant's knowledge at the time. His Honour, in giving judgment for the plaintiff for the full amount claimed, with costs, took occasion to caution persons against carelessly using, or allowing to be carelessly used, a deadly poison such as the powder in question contained, the principal ingredient being arsenic. He had no doubt the defendant was liable for the whole of the loss.

DEATHS FROM CHLOROFORM.

On Wednesday, December 29th, at the Middlesex Hospital, a young man died under the influence of chloroform, given during an operation for a diseased bone. The chloroform, of which only one drachm was used, was administered on lint, and all seemed to go on well until about five minutes after the commencement of the operation, when the patient suddenly ceased to breathe. Artificial respiration, after Sylvester's method, was adopted, and a galvanic battery was also tried, but without effect. An examination after death showed a diseased condition of the heart.

An inquest has been held at York on the body of John Plowman, aged sixty-eight, who had been admitted into the York County Hospital for the purpose of having a partial amputation of the foot performed. Chloroform was administered by the house-surgeon on January 11th. Scarcely a drachm had been inhaled when the patient suddenly became rigid, and his pulse stopped. Artificial respiration and other means were tried for a considerable time, but without avail.

ANALYSIS OF STEEDMAN'S SOOTHING POWDERS.

From an examination of these powders, a report of which was published in the 'Medical Times and Gazette' of January 1, it appears, from a careful weighing of each powder contained in four packets obtained from four different shops, that the variation in the weight of the powders was from 2¼ grains to 3¾ grains.

The following is given as the result of chemical analysis:—

	Percentage Composition of Steedman's Powders.
Calomel	27·20
Ash	0·06
Organic Matter	72·74
	100·00

The organic matter appeared to contain a trace of opium, and to consist mainly of inert substances; 28 out of 72·74 parts of organic matter was soluble in boiling water, leaving a brownish gum, bitter to the taste, and the remainder of the organic matter was insoluble in water.

In reference to the above analysis, Dr. Thomas Stevenson, Guy's Hospital, in a letter to the editor of the 'Medical Times and Gazette,' observes:—Your analyst found no morphia, but its presence may be readily detected thus:—Touch the powder with strong nitric acid; the powder becomes studded with orange-coloured dots. Dissolve a fragment of molybdate of ammonium in strong sulphuric acid. On touching the powder with this solution, a beautiful purple coloration is produced. That a salt of morphia, and not opium, gives rise to these reactions, I infer from the fact that no opium can be detected by a lens, or by the tests for meconic acid."

The following rejoinder from the author of the report on Steedman's Powders, appeared in the 'Medical Times and Gazette' of January 22:—"Morphia is a substance which contains nitrogen as one of its constituents. It must, therefore, be obvious that if a given powder contain no nitrogen, it cannot contain morphia. . . . The production of a purple colour with molybdate of ammonia and strong sulphuric acid is, moreover, a rather common occurrence, and takes place on the employment of a multitude of organic substances as well as with morphia. Among these substances cane-sugar is included, and it was doubtless to the reducing action of the cane-sugar present in Steedman's powders, that Dr. Stevenson owes the production of the purple which he mistook for the sign of morphia."

Steedman's teething powders were also examined, each packet of which consisted of nine powders; the weight of these powders was found to vary from 1·42 grains up to 2·78 grains.

The chemical composition being given as follows:—

Calomel	42·03
Organic Matter	57·97
Ash	trace
	100·00

The organic matter appeared to be quite inert. It was soluble in water, giving a solution having no particular taste. No opium was detected. There was no corrosive sublimate.

THE CHEMISTS' BALL.

This annual gathering of London pharmacists and their friends took place at Willis's Rooms on the 19th of January. Three hundred ladies and gentlemen were present. Dancing was kept up for five or six hours with great energy and evident enjoyment. The supper was well served, the wine excellent. The Chairman (Dr. Attfield) in proposing the usual toast, congratulated the company on reaching the fourth of these entertainments. All there, he said, were sailors in the good ship "Pharmacy," and during each twelvemonth of toil it was cheering to look forward to their annual recreation, their islet of pleasure in the ocean of labour. Then it was gratifying to know that their pleasure contributed to the good of their less fortunate brethren. For while the Ball was not held for the special purpose of swelling the funds of any charitable institution, yet surplus-money was devoted to the widow and orphan. Last year twenty guineas had been presented to the Benevolent Fund of the Pharmaceutical Society, and this year they hoped to be able to offer a similar donation. But above all reasons for meeting together in their usual free and happy way there was this, that by so doing they showed each other what Charles Dickens and Dr. Temple had called "encouraging sympathy," that interest in one another which produced gladness of heart. "Success to the Chemists' Annual Ball" was then proposed and responded to with vociferous applause. Cheers were also given for "The Ladies." The arrangements for the Ball were conducted by fourteen "Members of Committee," the largest share of the work evidently falling on the zealous Secretary, Mr. T. D. Watson.

Obituary.

RICHARD BOBBETT GILES.

"But chiefly, the Mould of a man's Fortune is in his own hands."—*Lord Bacon.*

We have lost during the past month one of the Founders of the Society. Such names are held in reverence by all who have the interests of pharmacy at heart. These men have borne the burden and heat of the day; they have helped to make the position we of the younger generation now enjoy; *they* have sown the field we reap. On January 5, at his residence, 1, Meridian Place, Clifton, Mr. R. B. Giles died in his 78th year. He was born at Tewkesbury on June 14, 1792. His father was governor of Gloucester Gaol, and died at a comparatively early age. He was partly educated at Berkeley, where there was an unusually good master, and partly in Yorkshire, where daring pranks were held in higher esteem than the pursuit of knowledge.

He was fond of recalling these wild escapades, even while deploring the time for mental improvement so neglected. In 1805 he was apprenticed in Clifton to John Speed Waldron, then carrying on an important business amongst the fashionable visitors to the Hotwells, and here he underwent the drudgery and hard work, as well as the more responsible duties of pharmacy. Subsequently he took a situation in London at the house of Messrs. Jones, in Gracechurch Street. This appears to have been an excellent school, with a very wide connection. The firm were surgeons in large practice, employing numerous assistants, with an open shop in which much business was transacted, and a laboratory in which most pharmaceutical preparations were made, including some articles (notably soap cerate plaster) supplied for the army. Here he stayed for some years,—indeed, until after the senior of the firm died, and his son disposed of the concern.

One incident in Mr. Giles' history recalls the anecdote of Lafitte. He applied for the post of junior clerk, but not being accepted, crossed the courtyard which subsequently became his own, mourning his fate. But the future celebrated banker picked up a pin,—was instantly sent for by an observant partner, and most fully justified in after life the repeal of the former verdict.

Mr. Giles often repeated an anecdote relating to his obtaining this place which is characteristic of the man, and may not be without its moral in the present day. Upon applying for the post he was referred to the senior partner, and after the usual inquiries, had to write a label, for which purpose a sheet of paper was supplied. It however happened that a waste scrap lay beside him, and taking it up, he said "Here is enough paper, Sir, if I may use this." The label was written and approved, and the writer was immediately engaged.

He next held a situation in the old-established and now celebrated house of Lea and Perrins, of Worcester, where he saw another variety of trade amongst county families, and the supply of a wholesale connection. In 1821 he returned to Clifton, and opened the business with which his name has ever since been connected. Clifton was then a very small place, and his *début* was proportionate to its insignificance. Mr. Giles subrented the ground floor of a house in the Crescent, which comprised his shop, and a room behind which served as bedroom, kitchen, parlour, and warehouse. Here, with the sole assistance of his errand boy, his frugal meals were cooked and eaten; but in this and every period of his life, he enjoyed that 'contented mind' which is a 'continual feast.'

He commenced with the smallest capital, not exceeding £100, but he brought to his task an unlimited store of patience, industry, and cheerfulness. His affairs prospered beyond his hopes, and having acquired the whole of the house of which he had at first only occupied a small part, he married in 1823 one who was in every way worthy of his affection. He made no pretensions to science, yet he cordially and actively sympathized with the advanced education in his own calling, of which he could never hope to share the fruits. He had the most unbounded veneration for those who were the active promoters of the establishment of the Pharmaceutical Society. He was eager to cooperate in every movement for the advancement of pharmacy, and even so late as September last, bore a part in inaugurating a new local pharmaceutical association, urging the members to establish themselves upon the solid basis of *work and mutual improvement.*

Why is this brief notice offered? Had Mr. Giles been described as a man of high intellectual or scientific culture, the account would have been mere panegyric and distasteful. First, he was a living and striking illustration of what untiring industry can effect. All of us may profit by the example. Secondly, he had one most enviable *virtue*,—neglected, but too often, habitual equal-minded cheerfulness. I have had special pleasure in having been asked to arrange these sentences, few of which are mine. Over many years of *my* father's life there hung the shadow of a cloud, not dark, but visible. He anticipated troubles which never came, and conjured up anxieties which need have had no existence.

The *mens æqua* is a great gift, for the possession of which we should render thanks to the Giver; if it has been denied, we should diligently cultivate its acquirement.

For many years he had withdrawn from active share in business, but while in it, no man ever pursued it more laboriously or allowed himself less relaxation. A brief holiday in the West of England, a short visit to the Channel Islands, and a trip to France, were his sole recreations during the forty years of his personal connection with Clifton life and work. Bronchitis, his old assailant, laid him low. He has entered into rest.

This is the simple record of a blameless man, of venerable aspect, with winning manners, and whom children loved. J. I.

On December 21, at his residence, York Place, Brighton, Grover Kemp, aged seventy-seven, one of the oldest members of the Society.

December 16, at his residence, 2, Parade, Northampton, Mr. Edwin Barry, in the forty-fourth year of his age, Pharmaceutical Chemist, deeply lamented by his family and friends.

REVIEW.

NOUVEAU DICTIONNAIRE DE BOTANIQUE, comprenant la description des familles naturelles, les propriétés médicales et les usages économiques des plantes, la morphologie et la biologie des végétaux. Par E. GERMAIN DE SAINT-PIERRE, Vice-Président de la Société Botanique de France (1850 et 1869), avec 1600 figures intercalées dans le texte. Paris: Baillière, 1870. 8vo. Pp. 1388.

The lengthy title of this volume sufficiently explains the subjects on which the author treats, while the fact that the work extends to nearly 1400 pages, may well indicate its comprehensive character. But with regard to the woodcuts, we must protest against the fiction by which they are set forth as amounting in number to 1600. Not only are a great many of them borrowed from other works, as from Guibourt's *Histoire des Drogues* (published more than twenty years ago) and from the pages of this journal, but the same engraving is often made use of twice, and in some instances (as those of *Cuscuta* and *Helleborus niger*) three times. This desire for profuse illustration assists, no doubt, in producing a work *ad captandum vulgus*, but it sometimes leads to strange errors, one of which occurs under the head *Encens ou Oliban*. This substance, the author states, includes resins or gum-resins derived from various trees, but especially from those of the orders *Terebinthaceæ* and *Burseraceæ;* adding, that the Incense of Bengal is furnished by *Boswellia serrata*, the Incense of Arabia by a *Balsamodendron*, that of Cayenne by *Icica guianensis* and *I. heptaphylla*, that of Russia by *Pinus Laricio*, Common Incense by divers *Abietineæ* and *Cupressineæ*, and finally the *Encens-des-Juifs* or benzoin by *Styrax Benzoin*, which is illustrated (?) by the woodcut (reduced) of—*Liquidambar orientale* which appeared in the *Pharmaceutical Journal* of March, 1857!

BOOKS RECEIVED.

The Chemists' and Druggists' Almanac and Pharmaceutical Text-Book. 1870. London: 'Chemist and Druggist' Office, Cannon Street.

Besides the information generally looked for in publications of this class, the present issue contains some ably-written articles, the titles of which we subjoin:—

"The Price of Medicines;" Daniel Hanbury, F.R.S. "Plain Directions for Testing Urine;" Prof. Attfield, Ph.D. "Mutual Help;" George Frederick Schacht. "English and Foreign Formulæ;" Joseph Ince, F.L.S. "Record of Pharmacy," etc.

We would direct particular attention to the admirable remarks, by Mr. Hanbury, on that vexed question, "The Price of Medicine."

The Journal of the Gynæcological Society of Boston. Devoted to the Advancement of the Knowledge of the Diseases of Women. Edited by Winslow Lewis, M.D.; Horatio R. Storrer, M.D.; and George H. Bexby, M.D. (Vol. I., Nos. 1 to 5, inclusive.) Boston: James Campbell. New York: L. W. Schmidt. London: C. D. Cazenove, Old Bailey.

The Half-Yearly Abstract of the Medical Sciences. Edited by William Domett Stone, M.D., etc. Vol. L. July—December, 1869. London: John Churchill and Sons; Edinburgh: Maclachlan and Co.; Dublin: Fannin and Co. 1870.

The Body and its Health: a Book for Primary Schools. By E. D. Mapother, M.D., etc. Second Edition. Dublin: John Falconer. London: Simpkin, Marshall, and Co. Edinburgh: Menzies. Melbourne: Robertson. New York: Harpers.

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the Editor, 17, *Bloomsbury Square, as early in the month as possible, and in no case later than the 20th of the month, if intended for publication in the next number.*

Medicine Stamp and Licence.

Dear Sir,—As a country member, and one who joined the Society at its commencement, I send my protest against the resolution carried by a majority of one (only) at the Council Meeting, Dec. 1st, in which it was ruled that it would be expedient to abolish the patent medicine licence and stamp. Nearly all who voted with the majority are London men, and therefore have but little knowledge as to country business and the interest of their provincial brethren. Abolish the patent medicine licence, and what will be the consequence? Booksellers and grocers will keep patent medicines, and in many cases will retail them below their proper value, and thus injure us in no light degree, without doing the public any corresponding good. I have had many years' experience, both of London and country trade, and can speak with some authority.

I should fancy you will receive many letters to the same point. The matter is too serious to be settled at a meeting of the Council only. The trade generally should be appealed to on the point.

It is all very well for proprietors of West-End shops, who have large dispensing establishments at "first-class prices" to think but poorly of their country brethren (at least, I conceive that they must do so, by the remarks I often see in the Journal); but I know that, as a body, we are up to the mark, and that, were some of the London chemists put into a large country business, they would find out they had much to learn.

A writer who signs himself "Utile," in the last Journal, thinks it "*infra dig.*" to sell small boxes of pills. I can only remark he can know next to nothing of the wants of the country poor; and it certainly is better that their little requirements should be prepared by those whose character and reputation are at stake than that they should be supplied by the ignorant.

Equalize the licence by all means, say 10s. per annum for town and country; but leave, in other matters, "well alone."

I remain, dear Sir,
Yours truly,
A Country Member.

Barnstaple, January 20th, 1870.

Sir,—Having sold patent medicines in London for twenty-five years, I have had many opportunities of learning the opinions of my brother chemists on this not unimportant branch of our business; and there are two, and only two, points which we have always considered objectionable. First, that we should pay four times as much as our country friends (in some cases eight) for the licence, although their sale for proprietary articles very far exceeds our own; and the second complaint has been the ambiguity which sometimes occurs as to stamping certain medicines.

It is to be hoped that the Council will make no other alterations than those to which I have referred; for what with the injury done to us by those unscrupulous cutting-men in our own ranks, and what with the threatened destruction of us by the "Civil Service Co-operative Societies," we cannot afford to have the sale of proprietary articles interfered with.

It may be mentioned, with regard to patent medicines, that they are never likely to increase numerically; for, as one comes into life, an old one dies out. And then the cost of making known a remedy, however valuable it may be, is such that years of anxious toil, with an outlay of some hundreds of pounds, is necessary just to make the public acquainted with its existence; and by which time the "would-be proprietor" finds his ardour cooled, and perhaps his means exhausted. Many can say with me, "Hinc illæ lacrymæ." And, further, there is another reason why there should be no alteration affecting the sale of patent medicines, and it is this, that whilst no person is *compelled* to use them, yet they are patronized by all classes, from the poorest peasant or artisan even to royalty.

Hoping these practical remarks may prove useful, believe me,

Yours faithfully,
East Central.

London, January 21st, 1870.

Sir,—In their aim agreeing with those who are seeking to put an end to quackery, I cannot agree with them as to the means by which they propose to accomplish that object, viz. the abolition of the patent medicine stamp and licence.

Their argument in support of the scheme is that if the government stamp be withdrawn from the nostrum, the confidence of the public in its efficacy will be withdrawn also.

This argument is, I think, fallacious, since the faith of the public is not produced by the stamp, but is the offspring of the effrontery of the quack and the simplicity of his victim.

At the same time, I admit that it is much easier to criticize proposed remedies than to propose better; yet to my mind, rather than abolish the stamp, it seems better to increase it tenfold on all secret preparations, which, if possessing the qualities ascribed to them, would be cheap at the increased rate; and, if not, the higher the price the less the sale, and consequently a diminution of the evil. Or, let some public body be appointed, whose duties shall be to examine and register the formulas of proprietary medicines, which, if possessing at least some pretensions to alleviate or cure disease, may be sold at the present rate of stamp duty, sanctioned by Government,—not of necessity as beneficial, but at all events as not injurious; the formula, of course, to be regarded as secret.

I do not put forward these ideas as dogmas to be acted on at once, but rather as suggestions admitting of expansion and improvement; and, trusting that some effectual means of at least arresting the spread of the evil may be put into operation,

I am, Sir, yours truly,
Alpha.

London, January 19th, 1870.

Sir,—As we are invited to express our opinions on the patent medicine controversy, allow me, as a country chemist, to say that any *great* alteration or interference with regard to their sale, would be very prejudicial to us who reside in the country.

As a rule, we sell a goodly number, for they are generally well advertised in the local papers, and happen to suit very many, especially of the poorer classes.

I do not, by stating this, wish to give any personal encouragement to proprietary, or, as some prefer to designate them, *quack*, medicines, although I put up several myself; yet, as in small towns there is so little remunerative dispensing, we are compelled to defend any legitimate branch of our business.

Again, the medicine stamp and licence money is a very useful addition to the revenue, which, although not amounting to much, is very easily paid, and more easily collected.

To confine the sale to chemists would perhaps be injudicious, inasmuch as many villages cannot support a member, therefore it would entail inconvenience on the rustic inhabitants; although an anomaly here presents itself, as it would be in contravention of the Act if non-registered persons were to sell poisons, many of the so-called patent medicines containing the scheduled articles in no small proportions.

Again, it would be unfair to charge *all* wholesale dealers a large sum as licence, because we who live in country towns, supply the neighbouring villagers with such articles as they require; yet which number would not nearly be sufficiently profitable to allow the payment of carriage from London by them, nor justify the investment in a heavy licence by us; therefore this would prove a very awkward dilemma for some. The Pharmacy Act has already much lessened our wholesale trade in poisons, and I must say, from experience, it has diminished very considerably the taking of opium and laudanum.

What I would suggest, then, are these four propositions:—

First, "That there should be a most *decided* opinion as to what a patent medicine really is."

Secondly, "That *all* patent medicines should be labelled agreeably with the provisions of the Pharmacy Act, that the public may know the nature of the remedy they are using, and be cautious accordingly."

Thirdly, "That the retail licence should be uniformly ten shillings per annum;" and—

Fourthly, "That wholesale dealers in London should pay £5, and wholesale dealers in the country £1, per annum, *inclusive* of retail licence."

These views I think will be endorsed by many country firms, and would not fall harshly on any. The fatigued mammas would still be able to administer Steedman's powders and Mrs. Winslow's syrup to their restless infants, and Holloway would remain in his glee.

Apologizing for the length of these remarks, believe me,

Yours very faithfully,
ALFRED WILLIAM SMITH.
Rye, January 8, 1870.

POISON ACT.

Sir,—I am located in a large village; am expected to dispense (although very little is done); take charge of all poisons; and am held responsible for any error that may arise upon the sale of them. Now, as there are more restrictions respecting the sale of poisons, consequently more trouble, time, and expense are incurred, and, what is to be regretted, without any additional income to the legitimate tradesman, but a diminution of profits; for the following reason, viz.:—Persons send for paregoric; a label with "Paregoric—Poison" is put on the bottle, an explanation is given (perhaps to a servant) about the word "Poison," and very often two or three interviews take place concerning it; at last, the customer thinks it unnecessary trouble, and feels annoyed. Again, chloric ether, chloroform, etc., are often sent for, and these I serve according to the Act, consequently in many cases give offence; then such persons go to a dirty huckster's shop (of which there are eight or nine in this place), where the drugs are sold, for simple medicines which are in much request, such as magnesia, rhubarb, senna, castor oil, ess. peppermint and pennyroyal, spirits of nitre, tincture and syrup of rhubarb, antibilious, aperient, and other pills, seidlitz powders, etc., which are inferior and sold at a lower rate. This brings the respectable tradesman in bad repute, because he charges a remunerative price for better drugs. The sale of drugs by such hucksters takes away a large amount from the right course.

Therefore, it is my opinion that no parties except chemists should be allowed to sell drugs. I think the sale of patent medicines should be confined to us, and one uniform charge for the licence should be adopted.

I am, yours truly,
ALPHA.
January 20th, 1870.

Sir,—I fear that the Pharmaceutical Council, by their recent additions to the poison schedule, have greatly increased our difficulties in the matter. I have referred to the "Case" published in the Journal for April, 1869, but a reperusal of it and the articles relating to it has by no means increased my satisfaction with the policy of the Council. In the Journal for this month the promoters of the Act are given great credit for having successfully resisted the introduction of the word "preparations" in all except five instances, whilst a few lines further on the Council is congratulated on having *now* added it no less than six times. Now this word "preparations" is perhaps the most objectionable word in the whole Act, as it is almost impossible to say what may not be held to be a preparation of a substance, provided any portion of it is contained in the mixture. It is all very well to refer us to Mr. Simon's *opinion*, which just amounts to this, "that we must use our own judgment in the matter, and act on our own responsibility," which is about as unsatisfactory a reply as could well have been devised. What we want is *authority*, not *opinion;* and *we do not want* the responsibility of deciding for ourselves what is properly in the schedule and what is not.

We have lately had abundant proof that magistrates, coroners, newspaper writers, *et id genus omne*, are only too ready to trounce a poor druggist if they can by any means get the chance of doing so; and the word "preparations" gives every opportunity, for whatever may be the *opinion* of the Privy Council or its officers, it does not alter the *fact* that the word is in the schedule, and that its interpretation rests entirely with the magistrate or his advisers, from whose decision an appeal, even if successful, would involve an amount of cost and trouble few of us are in a position to incur.

Besides, many will ask what do the Council mean by "preparations of prussic acid, or of the cyanides, or of the other substances enumerated"? Surely the word was quite needless in most of the cases where it has been added.

Further, how is the new regulation relating to "vermin-destroyers," by which they are placed in part 2 of the schedule, although the active ingredients are generally either arsenic or strychnia, to be reconciled with the provisions of the Act, which require the sale of all "preparations" of these articles to be registered? I suppose it was *intended* that they should be sold without registration, but, if I interpret the Act correctly, I do not see how registration is to be avoided.

With regard to the proposed regulation for the keeping, etc., of poisons, we have been so much accustomed to the argument that an improved education would so increase the feeling of responsibility in the mind of the druggist, and his sense of the dangerous nature of the commodities he is dealing with, that he would rise superior to the necessity of attempting to substitute fingers for eyes, and mechanical contrivances for brains, that I could hardly have believed that our Council would originate such a proposition.

As to regulation 1st, there is nothing to object to, provided it is kept within reasonable limits, and not made to apply to such articles as Dover's Powder, Pulvis Cretæ cum Opio, and others of the same class.

As to the second regulation, part 1 is utterly impracticable and impossible. How could any man keep all the various articles included in the poison schedules apart from other packages, etc.? And even if he could, where is the use of it? What need is there to keep opium, for instance, apart? or why should aconite and belladonna leaves be separated from other drugs, and henbane, conium, and digitalis leaves mix freely with senna and chamomile flowers? Moreover, very few have convenience, even if they had the will, to keep all these articles separate from the rest of the stock.

It is all very well for people who perhaps buy them by the ounce or drachm, and probably never see one-half of them at all, to keep all poisons in a separate closet, under lock and key; but I would like to know what kind of a closet it must be to contain a ton or so of arsenic, a chest of opium, ten or fifteen gallons of laudanum, and other things in a like proportion? It would rather astonish some of our London friends were they to see the stock of some of these articles which their provincial brethren have on hand. If the Council had proposed to apply the regulations to the keeping of the alkaloids and the more dangerous poisons, such as prussic acid and the cyanides, there might have been a prospect of their being adopted, and being of some service; but to apply the same rule to all the articles in a schedule containing nearly one hundred different substances, with strychnia and prussic acid at one end of the scale, and tinct. cantharides at the other, is contrary to all common sense, and would defeat its own object. Either the fingers would become so accustomed to feel the "angular, fluted, corrugated, or sand-papered bottles," that the effects of the intended caution would be entirely lost, or else the absence of those peculiarities in the handling of the bottles and pots would be considered an indication of safety; and thus mistakes would be far more likely to occur than if the special caution were restricted to a few really dangerous articles not often used.

With respect to the third regulation, it would be an admirable one were it only practicable; but no one at all conversant with the ordinary routine of chemists' shops in country places, and poor neighbourhoods especially, could possibly imagine that such a regulation would be carried into effect. In many shops the "dispensing and compounding" consists chiefly in something of this sort: "penn'orth of hartshorn, penn'orth of turpentine, with the same of laudanum and opodeldoc;" or perhaps it may be "penn'orth of laudanum and opodeldoc mixed." Does any one expect that a man with perhaps half-a-dozen other people waiting to be served, could or would stay to sand-paper the bottle that is brought, or exchange it for a "distinctive" one, and put two or three labels on besides! And yet, if he omits to do all this, he cannot lawfully carry on his business, supposing these regulations to be made law.

It is very easy, and quite right, for gentlemen who seldom do any "dispensing or compounding" except from physicians' prescriptions, and who never see anything so paltry as a penny customer, to comply with this regulation; but their less fortunate brethren cannot possibly do so with their pennyworths; and it must be remembered that the regulation applies equally to both cases, for it is as much "compounding and dispensing" with the poor man's penny as the rich man's shilling.

Let me not, however, be understood to say that I think no precautions necessary, and that no means should be adopted to guard against mistakes in dealing with dangerous substances; on the contrary, I think all the proposed regulations good to a certain extent, and put them all into practice more or less. But I most strongly protest against the authority of law being given to them, at any rate in their present shape. Had the Council *recommended* these regulations, without the proposal to enforce them by law, I should have been ready to approve; or had they restricted their operation to a limited number of the more dangerous articles, there would not have been so much objection; but a regulation which shall compel me to keep such an article as tr. lyttæ in an "angular, fluted, corrugated, or sand-papered bottle," and label it "poison,"—or, if I put a drachm of laudanum in a twopenny liniment, I must do the same thing,—under fear of certain pains and penalties, will, I think, be so far from giving satisfaction to the trade at large, that I shall be "greatly surprised" if there *be* anything like a "general acquiescence" in the arrangement.

I am glad to see our Edinburgh friends stirring in the matter, and trust their example will be followed by others, and raise such an opposition by next May as to cause the resolutions either to be withdrawn entirely or otherwise very considerably modified.

Yours truly,
W. Wilkinson.
Cheetham Hall, January 22nd, 1870.

Gentlemen,—May I, through the medium of the Journal, be permitted to state a case which I cannot help regarding as one of great injury, injustice, and annoyance, that it may be ventilated in your columns, if the conviction is at variance with the meaning of the Pharmacy Act of 1868? On the 12th of this month I was summoned by the police for selling a packet of "Clift's Vermin Killer," on the 19th of November last, without registering the same, and again for not labelling the packet with my name and address. I quoted, in my defence, several extracts from the Journal, also from the 17th sect. of the Pharmacy Act, showing that at present the sale of vermin killers was not included in Schedule A. I also called the particular attention of the Bench to your remarks, page 314 of your December number, and page 377 of your issue of the present month, also to the extract from the 'London Gazette,' contained in the same number, which distinctly shows that at present "vermin killers" are not within the meaning of the Act, but will be so after the 21st of this month. In defiance of all this plain reasoning, the justices of this borough have thought fit to inflict a fine of 2s. 6d. and 9s. costs, and against which I have, strictly speaking, no appeal, according to the Pharmacy Act, 1852, except by way of a case to the Queen's Bench, granted by the committing magistrates, which would be optional, and, as I understand, very expensive.

Your obedient servant,
Edward Davies, M.P.S.
Market Place, Bishop's Castle,
January 18, 1870.

Co-operative Trading.

Dear Sir,—I see by advertisements in the daily papers that the "Civil Service Supply Association" are about to relinquish furnishing others than the legitimate members of the service. Whether this has arisen from the invasion of a little conscientious feeling, or has been caused by the motive to set their house in order, I cannot say; but selfishness hitherto seems to have overruled all the better elements of a class, of whom, from position and education, a different state of things might have been expected. Here we have thousands of officials in excess, well paid and pensioned, absolutely combined to greatly injure a class which contributes so largely to their salaries and pensions, by opening stores to secure the profits in addition. Now, with regard to these pensions, they are but a relic of feudal times, but quite inconsistent with the spirit of the present age. Merchants', bankers', and other clerks enter their situations without stipulating for pensions; and very often have to work—really work—from dawn to dark, while the Civil Service *employés* work, or trifle, but from ten to four; and many of them are exceedingly "extensive," especially when adjusting matters of a public nature with those by whom they are paid. I hesitate not to say that if each of them were to work in the same degree as their commercial compeers, one-half the number would suffice to carry on every department of the public service. Not only chemists, but tradesmen of every class, ought to unite and insist upon more work being done, the numbers being reduced, and pensions for the future abolished, leaving each individual to provide for his dependants or old age out of his salary, or by life insurance, like the rest of the community.

I am quite satisfied that if every member of the Civil Service were to throw up his appointment, thousands in excess would flock to fill the vacancies even with less pay and irrespective of pensions. Then why not adopt the principle established by these public servants, and get their positions supplied on the lowest possible terms?

I am, Sir, your obedient servant,
London. Live and Let Live.

Pharmacy in France.

Sir,—Permit me to correct a slight error in "Pharmacien's" reply to "Valetudinarian," in your Journal for January. The two pharmacies at Mentone (French, Menton) in which English business is carried on are owned by M. Gras and M. Albertotti respectively. M. Gras formerly owned one in which French and Italian business alone is conducted, which he ceded to his assistant, the present owner.

One of the pharmaciens at Cannes is also named Gras, but there is no connection between the houses.

A pharmacien is allowed to conduct *only one* business with his own diploma.

The supply of competent assistants in good health is so much in excess of the demand that little difficulty is experienced in filling any vacancies which may occur, at nominal salaries. Many of the senior assistants in the south of France have an interest in the returns of the business, and therefore a vacancy rarely occurs. The amount of work to be got through at certain parts of the season is so great that few pharmaciens would be found willing to engage an invalid, with the risk of his being laid up when most wanted.

Vacancies are usually advertised in the months of August and September.

I am, Sir, your obedient servant,

DIRECTEUR.

Pau, January 18th, 1870.

V. C. (Whitechapel).—Veterinary surgeons who are members of the Royal College of Veterinary Surgeons of Great Britain, and those holding the certificate in veterinary surgery from the Highland and Agricultural Society of Scotland, only, are exempt from the restrictions of the Pharmacy Act.

Vinum Quiniæ.—Mr. John Beaton (Kilburn) states that "quinine wine may be prepared in a few minutes with a less quantity of citric acid, and the quinine so perfectly dissolved as not to require filtering. Take quinine, 20 grains; citric acid, 20 grains. Rub these well together in a mortar, add about one drachm of the wine; again briskly rub for a few seconds, and then gradually add the remainder of the orange-wine, 20 ounces.

"*Dispenser*" (Hastings).—Prescriptions of legally qualified medical practitioners, containing any of the scheduled poisons, must be copied in a book for that purpose. A registration of the particular poison in the "Poison Book" is not required in such cases.

W. Y. (Harrow Road).—Pharmacy Act; see page 442.

G. R.—A mixture made from the formula given, could only form an emulsion by the addition of either mucilage or yolk of egg.

"*Chemicus*" (Liverpool).—(1) Codex Medicamentarium; Pharmacopée Française. Paris: J. B. Baillière. 1866. (2) First saturate the lemon juice by means of the alkalies; then add the almond emulsion and the other ingredients.

G. W. S. (Chester).—*Cochlearia*, scurvy-grass.

T. T.—The new edition of Bentley's Botany will probably appear early in the spring.

M. P. S. (Abingdon).—*Linimentum Potassii Iodidi cum Sapone.* See page 453 of our present number.

"*Utile*" (Boston), in reply to "A. P. S." in our last number, sends the following recipe for *Jockey Club Bouquet*:—Ess. Jasmine ℥iv, Otto de Rose ℥iss, Ess. Bergamot ℥iv, Ess. Vanillæ ℥ij, Ess. Moschi ℥ij, Ess. Violet ℥ij, Sp. Vini Rect. ℥xvj. Mix, and let stand for fourteen days, and filter.

"*Mumbo Jumbo.*"—Calumba comes from forests on the shores of Oibo and Mozambique, as well as inland for fifteen or twenty miles (Pereira).

J. G.—Sulphur sometimes contains a little acid, which would be removed by washing it with ammonia, and a salt of ammonia would be left on evaporation.

"*A Beginner.*"—The gas would soon be lost by diffusion, if the tube were merely corked.

"*Junior Assistant*" should communicate with the Honorary Secretary, Mr. John Mackay, George Street, Edinburgh.

"*Chemicus*" should send the particulars of the case to the Registrar, 17, Bloomsbury Square.

J. L. (Sunbury).—If the quinine wine is made according to the Pharmacopœia, no licence is required, nor is a Patent Medicine stamp necessary, provided the printed label does not bring it within the law relating to patent medicines. See Vol. IX. (N.S.) page 212.

Mr. G. Brown (Sandown, I.W.), in reply to "A Correspondent," states that the usual custom of the trade when "Cinnabar of Antimony" and "Spirit of Sal Ammoniac" are ordered, is to supply antim. oxysulph. and liquor ammoniæ. [The term "Cinnabar of Antimony" was applied to the residuary product, on the preparation of chloride of antimony when corrosive sublimate is used.]

Mr. Cole (Coventry) complains of the injustice of the Pharmacy Act of 1868, and is "surprised to find a bungling amendment made, by which medical dispensers (who have served twice the required time in dispensing and compounding the prescriptions of medical men in hospitals, and private practice) are not allowed the privilege of passing the Modified Examination,—simply because they have not served as Assistants for a few years in a chemist's shop."

Instructions from Members and Associates respecting the transmission of the Journal should be sent to ELIAS BREMRIDGE, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. CHURCHILL, New Burlington Street, London, W.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. IX.—MARCH, 1870.

THE LATE JUDGMENT OF THE COURT OF QUEEN'S BENCH.

Our readers will, doubtless, peruse with great interest the report in our Journal this month, of the decision given in the Court of Queen's Bench reversing the judgment of the Worthing magistrates in *Reg.* v. *Berry*.

The case was ably argued on both sides, although some minor points may cause a smile among persons acquainted with medicines and their administration; notably, the question half advanced whether external applications were to be regarded as medicines at all, and whether the exemptions given in the case of poisons, when forming part of the ingredients of compounded medicines, were not given on the assumption that poisons so ordered were to be in combination with other articles intended to *neutralize* their properties.

We say this may cause a smile with those who know that the true ground for the exemption was, that such poisons would be apportioned and guarded by instructions for use in a way to render them safe in the hands of the patient. Having passed over these considerations and admired the manner in which Mr. Quain handled the matter throughout, we arrive at the lucid verdict pronounced by Mr. Justice Lush, and endorsed by Mr. Justice Hannen, and feel no small satisfaction at the entire correspondence in the interpretation of the 17th section of the Pharmacy Act, 1868, by these learned judges, with the opinion we have always expressed on it during the discussions which have taken place, not only in considering this special case of Berry's, but also when Dr. Brewer deemed it necessary to simplify the exemptions for compounded medicines by a section in the Act of 1869.

We are well-content, however, to have that simplification legally set forth, as it was by the promoters of the former Act in their alteration of Dr. Brewer's proposal; had it been left in his form, the 3rd section of the Amendment Act, by specially exempting the compounds made by duly qualified medical practitioners, would have cast a still greater doubt on those which chemists are daily called on to supply, and would have thrown on them the necessity of testing the genuineness of every signature appended to a prescription, no matter whether the writer lived in the same town or a hundred miles away from the dispenser.

It will be seen in the opening of the Judge's decision, that in the absence of any evidence to the contrary, he assumed that Mr. Berry was acting in good faith, and had a right to regard Mrs. Newton, whose name appeared on the prescription, as in reality the purchaser; he was, therefore, not only justified in entering her name in his book, but, in doing so, he satisfied the law in that respect.

We happen to know that when the obligation to make such an entry was inserted in the 17th section, what in this trial is called the option of naming either the person to whom the medicine is "sold" or "delivered," was expressly demanded on the part of chemists by those acting on their behalf, therefore the judicial rendering of the language used is important. The two words were used to meet contingencies with which we must all be familiar. A messenger carries a prescription bearing no name to a chemist, not knowing even by whom the medicine is to be taken. In that case the messenger's name, as the person receiving the medicine, was to be deemed sufficient.

And now as to the vexed question of labelling any mixture containing an article named in the schedule with the name of that article and the word "poison," on which Dr. Brewer and others have dwelt so pertinaciously. Over and over again we have stated that such a course would be on the face of it absurd, and an utterance of untruth; that the words, "*in the manner aforesaid,*" could not be construed to signify, *with the words aforesaid*, else what need to add "*with the name and address of the seller*"? when those words would have been included, according to the view of our opponents, in the "*manner aforesaid.*"

Here we find the learned Judge saying:—

"Then has he complied with the remaining part of the section, which requires that the medicine should be labelled in the *manner aforesaid, by which I understand distinctly and legibly*, with the name and address of the seller as stated in the section?"—

and at once declaring that Berry had complied with the legal requirements, both as to labelling and copying the prescription, not in the poison-book, but in the ordinary prescription book. We believe it was quite well-known from the commencement that this appeal was in reality promoted by the Pharmaceutical Society. It could scarcely be expected that, to relieve himself of two fines of ten shillings each, Mr. Berry would have entered on an expensive litigation in the Court of Queen's Bench. But in a question affecting, as this does, the interest and security of every chemist in Great Britain, it was obviously the duty of the Council to set aside so monstrous a perversion of the intention of the Act, and obtain at once a judicial reading of the section, which will, doubtless, hereafter be cited as an authority, should similar prosecutions arise.

JUDICIAL DECISIONS RELATING TO THE PHARMACY ACT.

Litigation follows legislation. Our columns for this month report several cases of interest to our readers, and, happily, each has terminated satisfactorily.

First, in point of date, is the action for a penalty of £5, sued for in the Bloomsbury County Court. In that case, a person not registered as a Chemist and Druggist, admitted having used the title "Chemist," and also having sold poisons, and the judge received the admission, and, at the defendant's request, considered the joint opinion of her Majesty's Attorney-General and Mr. Bullock, which had been taken on behalf of the Society; he then accepted the register as proving itself, and concluded by giving a verdict for the penalty.

Next in order of date was the further hearing of the Oldham case, where a herbalist of the district, not being registered, advertised himself as being a Registered "Chemist and Druggist," and alleged that he was right in so doing, because of having sent to the Registrar forms in accordance with Schedules (C) and (D), and had a written acknowledgment of their receipt; and the case resulted in a judgment for the penalty of £5; it is interesting, because of showing a manifest reluctance on the judge's part to give judgment against the defendant, and that the law was so plainly with the Society, that the right to the judgment became clear upon the facts.

Third, and last in point of date, is the most important decision of the Court of Queen's Bench on the appeal in the Worthing case, which also resulted satisfactorily to the well-wishers of pharmacy. This case is referred to in the preceding article.

When we so often hear of the "glorious uncertainty" of the law, it is well to note, that in each of the instances of resort to a Court, the views which have been expressed in this Journal, as to the intentions of the Legislature, and the meaning of the statutory language, have borne the test of the judicial interpretation.

ADULTERATION OF FOOD AND DRUGS BILL.

Mr. Muntz has introduced a Bill into Parliament to amend the "Adulteration of Food and Drink Act of 1860," and to extend its provisions to drugs. He reserved the explanation of the measure until the second reading; but as the Bill is already printed, we are enabled to state that it is substantially the same as the Bill of last Session, a copy of which will be found at page 657, and comments upon it at page 617 of the preceding volume of this Journal.

MEDICAL ACTS AMENDMENT BILL.

Sir J. Gray has introduced a Bill into Parliament to amend the Medical Act of 1858, and the Acts amending the same, the objects of which are to secure a more direct representation of the profession on the Medical Council, and to so increase the powers of the Council as to enable them to prevent any person from being enrolled on the register of practitioners who has not previously proved his qualifications by a satisfactory examination. The Bill was read the first time on the 21st of February, but it is not yet printed.

THE PETROLEUM ACTS 1862, 1868.

On the 19th of February a judgment of considerable importance to those interested in the petroleum trade was delivered at the Guildhall, Westminster. A retail dealer appealed against a conviction by Mr. Paget, of the Thames Police Court, for keeping petroleum contrary to the provisions of the Petroleum Acts. On behalf of the appellant, whose case was promoted by the Petroleum Association, it was contended that the Acts provide that the testing of the petroleum shall be conducted by an inspector of weights and measures, and that, since the person on whose evidence the conviction was based was not an inspector of weights and measures, but a gas inspector, the requirements of the Acts had not been complied with. The Court retired to consider this preliminary objection, and on their return ruled that the provisions of the Acts of Parliament had not been carried out, and therefore they unanimously quashed the conviction.

From the address of the barrister who appeared in support of the conviction, it was evident that, had the case proceeded further, an illustration would have been afforded of the defective character of the provisions of the Acts relating to the testing of petroleum. The inspector who examined the oil stated at the police court that the oil gave off inflammable vapour at a temperature of 95° F., and that therefore it was petroleum within the meaning of the Act; while Mr. Kemp, of the Petroleum Association, had found, as the result of careful testing, that no flash took place until the oil had been heated to 105° F. With a view of reconciling these conflicting statements, both operators, at the magistrate's desire, retired into a private room and repeated their experiments, but with the same results as they had previously obtained. Each had his own apparatus, and the testing was apparently similarly conducted by both, with this exception, that the gas inspector, by using under the water-bath a larger flame than that employed by Mr. Kemp, obtained his result in less than half the time. It was evident, from a single glance, that no great amount of care had been bestowed upon the construction of the apparatus used by the gas inspector, while that with which the other experimenter's test was conducted appeared to have been made with great attention to workmanship, and strictly in accordance with the directions of the schedule.

With the parliamentary apparatus, well made and carefully adjusted for use, a skilled operator, working in an apartment free from currents of air, can, there is no doubt, obtain results that are accurate as compared with each other, if he takes care that the length of time occupied in raising the temperature of the oil to the flashing-point shall be the same in all cases; but until the length of time so occupied is defined by the Legislature, or at any rate, until all are agreed as to what it shall be, there will occasionally be inconsistencies in the results obtained by different operators under the most favourable circumstances. It is, however, clearly a mistake that the testing of petroleum should be placed in the hands of those who are unaccustomed to such operations, and who are, perhaps, in addition, provided with apparatus constructed with more regard to economy than efficiency.

Certain modifications of the schedule, including more detailed directions as to the mode of using the apparatus, and such provisions as shall secure its use officially by none but competent persons, appear to be amendments that must, sooner or later, be made to the Petroleum Acts, 1862, 1868.

The Petroleum Association has done good service in this, as in many other cases, by protecting the interests of an important trade.

MASTER OF THE MINT.

For many years past the office of Master of the Mint has been filled, in this country, as it is in France and other Continental countries, by men of high scientific attainments, and the position has been looked upon as one of the very few profitable as well as honourable appointments which our Government has conferred on those who have distinguished themselves in the pursuit of science. After the death of Mr. Graham, the late Master of the Mint, it was confidently expected that the vacant post would be filled, as before, by some one whose experience and knowledge would place him on a par with his predecessors. Several candidates of that class were publicly spoken of, and it was the subject of a good deal of speculation in scientific circles as to who would be the successful one. A rumour at last arose that the office was not to be filled up at all, and the excitement on the subject gradually subsided. Still many persons have been wondering what regulations were about to be made. A Bill that has just been introduced into parliament explains what is proposed to be the new arrangement. The 15th section is to the following effect:—

> 15. The Chancellor of the Exchequer of Great Britain for the time being shall be the master, worker, and warden of her Majesty's royal mint in England, and governor of the mint in Scotland.
>
> Provided that nothing in this section shall render the Chancellor of the Exchequer incapable of being elected to or of sitting or voting in the House of Commons, or vacate the seat of the person who at the passing of this Act holds the office of Chancellor of the Exchequer.
>
> All duties, powers, and authorities imposed on or vested in or to be transacted before the Master of the Mint may be performed and exercised by or transacted before him or his sufficient deputy.

GOVERNMENT AID FOR SCIENTIFIC EDUCATION AND RESEARCH.

The Council of the British Association for the Advancement of Science are trying to induce the Government to appoint a Royal Commission to inquire into the existing relations of the State to scientific instruction and research, with a view to its being put upon a more satisfactory footing. In furtherance of this object a deputation, comprising Professor Stokes, President of the Association, Professor Huxley (President elect), Professor Williamson, and other members of the Council, had an interview with the Lord President of her Majesty's Privy Council on the 4th of February, when the subject was freely discussed. The members of the deputation do not appear to have expressed any very decided opinions in favour of extending Government aid in this direction, but thought it very desirable to inquire among scientific men whether the assistance afforded by the State to the advancement of science was at present such as contributed in the most effectual manner to the object for which it was intended, or whether some other plan might not be more advantageously adopted. It was admitted that large sums were contributed by the Government towards the support of scientific institutions or the furtherance of some of the objects of such institutions, but doubts appeared to be entertained whether these contributions were well and economically applied. Allusion was made to the Observatory at Greenwich, the British Museum, and the institution at South Kensington, where good work was done; also to the grant of £1000 annually made to the Royal Society for defraying the cost of scientific investigations, with reference to which it was stated as the opinion of some persons that there should be a distinct national institution for carrying out investigations of that kind. Professor Sylvester referred to the advanced class at Woolwich, where there were seven students (he has since corrected it to five) at a cost to the State of about £700 a year each, and the expensive school in Jermyn Street, with only thirty matriculated students, he thought was not appreciated as it ought to be. Professor Huxley, while in common with the other members of the deputation he strongly advocated the appointment of a Commission of Inquiry, doubted the expediency of obtaining direct aid from Government for scientific education, and thought it would eventually become a sort of decorated and endowed idleness. In expressing this opinion, however, he did not allude to primary education, for he thought there was no man of science who disapproved of the grant made for promoting that object. Professor Williamson thought there were resources in the country for the aid of the higher branches of scientific education which were insufficiently utilized, or in other words, that there are existing institutions which are not so useful as they might be. The tone assumed by the deputation was not such as to indicate any strong feeling in favour of an extension of Government patronage for the encouragement of science, but showed rather a tendency to advocate a better application of the funds at present contributed by the State for such purpose. Earl de Grey, while promising that the subject should receive the attentive consideration of the Government, seemed to hold out no prospect of any change being made in the existing arrangements.

PORTRAIT OF JACOB BELL.

In our number for January we alluded to the engraving of Sir Edwin Landseer's portrait of Jacob Bell, which has been executed by the artist's brother, Mr. Thomas Landseer, in his best style, and copies of which may be obtained of Mr. Bremridge, at 17, Bloomsbury Square. The original painting is the property of the Treasurer, Mr. T. H. Hills, who proposes to make the sale of the engravings a means of providing a sum in the form of an endowment, to be applied to such objects in connection with the Pharmaceutical Society as may appear to present the strongest claims. In our former notice we spoke of the profits resulting from the sale of the engravings being thus applied, but we now find that the Treasurer's liberality far exceeds this, for he bears the whole expense of the engraving and printing, and proposes to apply for the benefit of the Society the entire proceeds resulting from the sale.

TRANSACTIONS

OF

THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *February 2nd*, 1870,

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

MR. HASELDEN, VICE-PRESIDENT.

Present—Messrs. Bottle, Bourdas, Carteighe, Deane, Dymond, Hills, Ince, Morson, Orridge, Randall, Savage, Stoddart, and Williams.

The minutes of the last meeting were read and confirmed.

The lot for the next Council having been taken in the usual manner, the following were declared to go out of office, but are eligible for re-election:—*

Abraham, John, 87, Bold Street, Liverpool.
Bottle, Alexander, 37, Townwall Street, Dover.
Carteighe, Michael, 172, New Bond Street.
Edwards, George, Dartford.
Evans, Henry Sugden, 60, Bartholomew Close.
Haselden, Adolphus F., 18, Conduit Street.

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* Bye-laws, sect. 5, clause 3:—"Any person qualified to vote desirous of nominating any Member for election as a Member of the Council or as an Auditor, shall give notice in writing with the name and address of the nominee, and if for the Council, disclosing whether such nominee be or not a Pharmaceutical Chemist, to the Secretary of the Society, on or before the 24th day of March in every year."

Ince, Joseph, 26, St. George's Place, Knightsbridge.
Morson, Thomas N. R., 38, Queen's Square, Bloomsbury.
Orridge, Benjamin B., 32, Ironmonger Lane.
Randall, William B., 146, High Street, Southampton.
Savage, William Dawson, 30, Upper Bedford Street, Brighton.
Squire, Peter, 277, Oxford Street.
Stoddart, William Walter, 9, North Street, Bristol.
Williams, John, 5, New Cavendish Street.

The following Members were declared to remain in office for the ensuing year:—

Bourdas, Isaiah, 7, Pont Street, Belgrave Square.
Brady, Henry B., 29, Mosley Street, Newcastle-on-Tyne.
Deane, Henry, Clapham Common.
Dymond, George, 17, Bull Street, Birmingham.
Hills, Thomas Hyde, 338, Oxford Street.
Mackay, John, 119, George Street, Edinburgh.
Sandford, George Webb, 47, Piccadilly.

The Report of the Finance and House Committee was presented, showing on the General Fund Account a balance in the Treasurer's hands of £755. 7*s*. 3*d*., and on the Benevolent Fund Account a balance of £548. 16*s*. 10*d*.; and submitting for payment accounts, and various items, amounting to £518. 12*s*. 5*d*.

Resolved—That the Report be received and adopted, and payments made.

With reference to the recommendation of the Committee to provide a "strong room" for the registers and other official documents, the matter was referred back to the Committee, with power to make the necessary alterations in carrying out this object.

The Report and recommendations of the Library, Museum, and Laboratory Committee was read and adopted.

The Report and proceedings of the Parliamentary Committee having been read and considered, it was moved by Mr. Hills, seconded by Mr. Morson,

> Resolved—That the said Report be received and adopted, with the exception of the "Reasons" prepared by the Committee for the abolition of the Patent Medicine Stamp and Licence.

Mr. Savage placed on the table a memorial signed by Chemists and Druggists at Goole and neighbourhood, to the effect that the removal of the Patent Medicine Stamp and Licence would be an unwise and impolitic act to the Trade, and of no benefit to the general public.

Other letters of the same nature were read.

It was moved by Mr. Carteighe, seconded by Mr. Williams,

> That the reasons for the abolition of the Patent Medicine Stamp and Licence submitted by the Parliamentary Committee be received and adopted.

Amendment—Moved by Mr. Savage, seconded by Mr. Orridge—

> That the further consideration of the Patent Medicine Stamp and Licence be postponed until after the Annual Meeting.

For the Amendment,—Messrs. Bottle, Dymond, Hills, Ince, Orridge, and Savage.
Against,—Messrs. Bourdas, Carteighe, Haselden, Randall, and Williams.

The Chairman declared the Amendment carried and proceeded to put it as a substantive motion.

The following Amendment was then moved by Mr. Randall, seconded by Mr. Morson:—

> That the Commissioners of Inland Revenue be informed that, on further consideration of the question of the abolition of the Patent Medicine Stamp and Licence, the Council find among the body they represent such difference of opinion, that they are unable to make any strong recommendation on the subject; while at the same time, they have no doubt of the very great importance of these laws, if not repealed, being more distinctly defined, and of their being prevented from being made a means of evading the Pharmacy Act in the sale of poisons.

For the Amendment—Messrs. Bottle, Bourdas, Carteighe, Evans, Haselden, Hills, Morson, Randall, Stoddart, and Williams.

Against—Messrs. Dymond, Ince, Orridge, and Savage.

The President declared the Amendment carried, which was put as a substantive motion and passed.

Resolved—That the Secretary be instructed to place a copy of the tabular form of Regulations, prepared by the Parliamentary Committee in reference to the sale and dispensing of poisons, in each number of the Journal and Transactions of the Society for March, and that copies be sent to the local secretaries for distribution among chemists and druggists in their respective districts; and the secretary was also instructed to furnish the publisher of the 'Chemist and Druggist' with copies for enclosure in his next number.

Pursuant to notice it was moved by Mr. Savage, seconded by Mr. Bottle—

That the Certificate for the Preliminary Examination, according to the original plan, duly authenticated as having been given on or before the 31st of August, 1869, be received and acted upon.

For the motion—Messrs. Bottle, Ince, Morson, Orridge, Savage, Stoddart, and Williams.

Against—Messrs. Bourdas, Carteighe, Evans, Haselden, and Randall.

The President declared the motion carried.

Moved by Mr. Carteighe, seconded by Mr. Ince—

Resolved—1st. That the resolution respecting the certificates for the Preliminary Examination now passed be advertised in the notice page of the Journal for March and April.

2nd. That no such certificates be received after 1st May, 1870.

BENEVOLENT FUND.

Resolved—That on the Report and recommendations of the Benevolent Fund Committee, the following grants be made:—

The sum of £10 to a distressed Member in Jersey.
„ £10 to a distressed Member in London.
„ £20 to the widow of a late Member in Kent.

It was also

Resolved—That the Treasurer be requested to purchase £500 consols to the account of this Fund.

The Board of Examiners for England and Wales reported that they had during the month of January examined—

6	candidates	Major,	and passed	6
14	„	Minor,	„	12
47	„	Modified,	„	37
67				55

The Board of Examiners for Scotland reported that during the month of January they had examined—

1	candidate	Major,	and passed	1
3	„	Minor,	„	1
8	„	Modified,	„	6
6	„	Preliminary	„	3
18				11

The President reported it had given him great pleasure to preside at this meeting of the Scotch Board, and to compare the mode of procedure in Edinburgh with that of the London Board.

Resolved—That the following, being on the Register of Chemists and Druggists, be elected—

MEMBERS.

Ambrosse, John David Long, Montreal.
Baker, Henry Villars, Upper Bangor.
Barton, William Henry, Upper Norwood.
Bennett, Cornelius, 53, Lambeth Street, London.
Bowes, John Sidney, Leeds.
Bullen, Thomas, 13, Hereford Road, Bayswater, London.
Caley, John Clague, Liverpool.
Clark, Edward, Lancaster.
Clarke, Walter, 22, Hereford Place, Commercial Road East, London.
Cooper, Frederick Thomas, Long Stratton.
D'Aubney, Thomas, 82, Shepherdess Walk, Shoreditch, London.
Evans, Alfred Edwards, Brynmawr.
Frost, William, Bromley.
Garner, James, 62, High Street, Kensington, London, W.
Garnett, Thomas, Kendal.
Goodwyn, Charles S., Steyning.
Hambly, Charles Joseph, Taunton.
Hill, William, 41, Union Street, Bishopsgate Street Without, London.
Hutchinson, Joseph, Buxton.
King, Henry, 1, Churton Street, Westminster, London.
Langford, John Brown, Wellington.
Levack, David, Lossiemouth.
Lewis, George, Monmouth.
Llewellyn, Peter Howell, Tunbridge Wells.
Milne, Patrick, Arbroath.
Priestley, John, Bolton.
Ramsden, Thomas, 29, North Audley Street, London.
Reed, Charles William, Lewisham.
Rew, Robert May, 282, Regent St., London.
Rowell, Robert Henry, Southsea.
Rowland, William, Wrexham.
Sargant, John, Reigate.
Scruton, Peter Dickinson, Boston.
Sever, Thomas, Landport.
Simpson, Robert, Leeds.
Thackray, Henry, Honley.
Troughton, Christopher, Liverpool.
Wade, John, 174, Warwick Street, Pimlico, London.
Wells, Thomas, Upper Teddington.
White, George Henry, Mountain Ash.
Wilson, Richard Bowes, Dudley.
Wilson, William, Devonport.

Resolved,—That the following Pharmaceutical Chemists be elected Members of the Society:—

Brady, Alfred, Newcastle-on-Tyne.
Holmes, Jasper Clement, London.
Robertson, William, Elgin.
Smith, Walter Henry, Brighton.

Resolved—That the following Pharmaceutical Chemists be elected Members, and that their Diplomas be stamped with the seal of the Society:—

Harvey, William Brett, Frome.
Heron, James, Edinburgh.
Hugo, John Edmund, London.
Martin, Nicholas Henry, Clapham.

Resolved—That William Clark, of Landport (Associate of the Society before July, 1842), be elected a Member of the Society.

Resolved—That the following, being duly registered as Pharmaceutical Chemists, be severally granted a Diploma, stamped with the seal of the Society:—

Bilney, Joseph Thomas, London.
Brown, Joseph Frederick, Frome.
Hills, Walter, Ryde.
Holmes, Jasper Clement, Southampton.
Rimmington, Felix William Elgey, Bradford.
Robertson, William, Elgin.
Swire, Jabez, Skipton.

Resolved—That the following having passed the Modified Examination, and being in business, be elected Associates of the Society:—

Gallimore, Thomas, Rusholme.
Palmer, Philip Lintill, East Sheen, S.W.
Williams, John, Wrexham.

Resolved—That the following, having passed their respective Examinations, be elected Associates of the Society:—

Adams, Frank, Brighton.
Adams, Frank, Stoke-on-Trent.
Barrow, Francis Clarke, London.
Bentley, John Nuttall, Crosshill.
Best, Thomas Futcher, Bath.
Brown, Arthur Mavor, Bury St. Edmund's.
Brown, Frederick Peter, Grantham.
Cadman, Daniel Charles, London.
Cleaver, Edward Orlando, Croydon.
Cock, John, Falmouth.
Foottit, Charles M., Marlow.
Fry, William Cattle, Cheltenham.
Gamble, Henry Arthur, Southampton.
Gill, William, Brighton.
Hancock, Edward Newton, Exeter.
Higham, Thomas, Brighton.
Hiscock, Richard, Coventry.
Hollway, Albert B., Cardigan.
Lingwood, William, London.
Maitland, John Edward, London.
Manning, Henry, Fairford.
Millidge, Alfred, Newport, Isle of Wight.
Pettman, Richard, Folkestone.
Poole, Thomas Leighton, Stretford.
Porter, William Albert, Richmond, S.W.
Pryce, Alfred Clement, London.
Rees, David, Llandloes.
Robertson, Frederick F. Leslie, London.
Roebuck, George, Peterborough.
Sanders, Thomas Scholes, Manchester.
Wynne, Edward Price, Leominster.

EXAMINATIONS IN LONDON.

February 11*th*, 1870.

Present—Messrs. Bird, Carteighe, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, and Southall.

Eight Candidates presented themselves for examination; the following five passed, and were duly registered as

PHARMACEUTICAL CHEMISTS.

Clarke, Arthur Henry, London.
Havill, Paul William, Tiverton.
Jenkins, John Thomas, New Radford.
Reynolds, Freshfield, Leeds.
Terry, Thomas, Manchester.

MODIFIED EXAMINATION.

Thirty-six Candidates were examined; the following twenty-six passed, and were registered as

CHEMISTS AND DRUGGISTS.

Bonny, John, Blackpool.
Bowler, William Samuel, Ashbourne.
Brett, William Robert, London,
Clement, John Radford, Liverpool.
Darby, John Clark, London.
Drane, William, Harrow.
Ellis, Henry, jun., London.
Graham, Samuel, Bath.
Harvey, William Rivett, Derby.
Herron, Archibald James, Margate.
Hillen, John, Cheltenham.
Inkley, Jesse, Holbeach.
Jones, Elias Richard, Liverpool.
Jones, Hugh, St. Asaph.
Lewis, Edwin Alaric, London.
Lewis, Owen, Bangor.
Masters, George Cheesman, Eastbourne.
Moody, Alfred, Gloucester.
Pollexfen, Edward, Thornton.
Rayner, Hessey, Eastbourne.
Robertson, George, London.
Scholefield, Herbert, Tue Brook.
Turpin, Alfred Barritt, Oxford.
Walker, Henry, Tunstall.
Walter, William, Northampton.
Waterton, Henry, Hoylake.

February 16*th*, 1870.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Gale, Garle, Hanbury, Haselden, and Ince.

Dr. Greenhow was also present on behalf of the Privy Council.

Twenty-two candidates were examined,—six Major and sixteen Minor; the following passed, and were duly registered:—

MAJOR (as Pharmaceutical Chemists).

*Peck, Frederick Hamilton, Poole.
Robinson, John, Hexham.
Goulden, Henry James, Walworth.
Harvey, John William, Brighton.
Swain, William Thomas, Selby.

MINOR (as Chemists and Druggists).

†Gwatkin, James Ross, Brighton.
Fowke, Robert Main, Worcester.
Pilley, Henry Thomas, Lincoln.
Keen, Benjamin, Uppingham.
Jackson, John Pim, Leeds.
Greig, William, Sunderland.
Clarke, Cornelius John, Ipswich.
Rome, George William, Langholm.
Walton, Jonathan Sparke, Haydon Bridge.
Fisher, Richard, Preston.

The above names are arranged in order of merit.

EXAMINATION IN EDINBURGH.

February 17th, 1870.

Present—Messrs. Aitken, Brown, Buchanan, Kemp, Mackay, and Young.

MINOR EXAMINATION.

The following presented themselves for examination, and passed, and were registered as

CHEMISTS AND DRUGGISTS.

Easson, Robert, Glasgow.
Riddle, William Routledge, Hexham.
†Symington, Thomas, Edinburgh.

MODIFIED EXAMINATION.

Six Candidates presented themselves; the following five passed, and were registered as

CHEMISTS AND DRUGGISTS.

Anderton, Samuel, Birmingham.
Bowman, John, Edinburgh.
Hall, Robert, Aberdeen.
Johnson, Robert Armstrong, Newcastle-on-Tyne.
Pring, Henry Joseph, Belfast.

FIRST, OR PRELIMINARY EXAMINATION.

Eight Candidates presented themselves; the following seven passed, and were registered as

APPRENTICES OR STUDENTS.

Dobie, Thomas, Glasgow.
Field, Alfred William, Edinburgh.
Foster, John, Crieff.
Gibb, Robert Alexander, Edinburgh.
Howie, William Lamond, Edinburgh.
McGibbon, George Laidlaw, Edinburgh.
Raimes, Richard, Edinburgh.

PHARMACEUTICAL MEETING.

Wednesday, *February 2nd*, 1870.

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

The Minutes of the previous Meeting having been read, the following

DONATIONS TO THE LIBRARY AND MUSEUM

were announced, and the thanks of the Meeting given to the respective donors thereof:—

Guy's Hospital Reports, vol. xv.: from the Editors.—Principios para la Materia Médica del Pais, por J. M. Benites: from Dr. Ernst.—Specimen of Bael Fruit Gum: from Mr. Pound.—Specimens of various Alkaloids: from Mr. E. Hübschmann.—Various articles, such as scales, spatulas, etc., used in German pharmacy: from Messrs. Poths and Haas.—Twelve Specimens of Chemicals: from Mr. Skelton Atkinson.

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* Passed with honours; eligible, at the end of the Session, to compete for the Pereira Medal.

† Passed with honours; eligible, at the end of the Session, to compete for the Prize of Books.

NOTES ON THE PHARMACOPŒIA.

Mr. **Bland** resumed the discussion upon this subject, and observed that some apology was due from him, after having occupied so large a portion of the time of the last meeting, for being again prepared to trespass upon their attention. Whenever he had the privilege of attending meetings of the Society, he had found something both to interest and instruct him, and it had always been a great disappointment to him when, by any unavoidable circumstance, he had been prevented from attending them. He had, however, generally taken the part of a listener, but on the last occasion it seemed to him that a very important discussion was on the point of being prematurely closed when the subject was really not exhausted. There were one or two points in connection with the responsibility which devolved upon them as pharmaceutical chemists, in bringing about the universal adoption of the British Pharmacopœia, and also upon their relation to the Medical Council, upon which he thought it was exceedingly desirable to have an expression of opinion from the members present who had large experience in such matters. He stated at the last meeting that, so far as his experience went, a very large proportion of the prescriptions which passed through their hands were written by gentlemen who continued to use the old forms, preparations, and expressions of the London Pharmacopœia. From the general indications of assent which came from various parts of the room at that time, it seemed to him that his experience was not at all singular in that respect, and that in point of fact a very large number of gentlemen connected with the medical profession did, in their actual practice, ignore the existence of the British Pharmacopœia. Under such circumstances, he could not but feel that it was somewhat hard that the Medical Council, representing as they did the medical profession, should insist on chemists following as their guide a pharmacopœia which so many of the profession did not even take the pains to become acquainted with. There had been a disposition among some members of the medical profession to come to them and say, "You are to receive this book with a sort of superstitious reverence, as if it were a gift from the gods, and you are in no wise to presume to question the perfection of any of its formulæ, but you are to render to them an implicit obedience, until it pleases Heaven and the Medical Council to send you another." He admitted that, on the whole, the Pharmacopœia was a most excellent production, and for his own part he should be delighted to see it introduced, not only into general, but into universal practice, as the ordinary canonical standard by which their proceedings were to be conducted. At the same time he must be permitted to exercise his judgment in special cases, for this Pharmacopœia interfered with him at every step in the prosecution of his daily business, often to his inconvenience, sometimes to his expense; and such judgment and reflective power as he possessed he should presume to exercise upon certain of its formulæ which seemed to him to be defective and capable of improvement, and, if he obeyed, he should still not forego the Englishman's privilege of grumbling. There had been, not only amongst some portion of the medical profession, but amongst some of their own body, a desire to insist upon a fastidious and practically impossible state of purity with regard to some of the chemical preparations; and he thought they ought to look this matter calmly in the face and examine exactly how the facts lay. The great majority of chemists in London were people of small businesses, and perhaps the whole labour of the ordinary shop routine devolved upon one or two pairs of hands. Under such circumstances it was impossible that a pharmaceutical chemist could have more than very scant opportunities for purely scientific investigation; in fact, it was quite certain that nothing but a very ardent following of his profession could enable him to snatch such moments for improvement and reading as would keep him even tolerably abreast of the advance of knowledge in the present day. He heard gentlemen speak of certain chemical substances being impure, because they contained foreign matter, which, however, when reduced to a percentage, did not appear to be appreciated until it got into the second or third place of decimals. That was all very well as a matter of chemical research; at the same time it was a refinement and hypercriticism which, in the ordinary practice of their business, they might very safely disregard. Dr. Redwood told them last month that they ought not to be contented with the tests which were supplied in the British Pharmacopœia for the examination of various compounds; that it was not desirable they should say such-and-such substances would do because they had passed the ordeal of pharmaceutical test, but that they were bound to find out for themselves, and to apply, tests with still greater rigour and delicacy. He thought they were drifting in the direction of over-refinement, which would certainly defeat its own purpose, and which could not possibly be carried out by the pharmaceutical chemists of this country. The vast majority of them must absolutely depend for their supply of chemical preparations upon the chemical manufacturer. If they got articles which were fairly and honestly what they professed to be, free from fraudulent admixture and wilful or careless adulteration, they must of necessity be content. There was no help for it, as it would be utterly impossible for any pharmaceutical chemist to prepare the whole of the chemical substances which he used in his business.

He had taken notes of one or two of the matters in the British Pharmacopœia which seemed to him worthy of notice, not altogether by way of criticism, but upon which some interesting observations might be made. The first article to which he would refer was alum. The official alum was that which contained sulphate of ammonia. Until the issue of the British Pharmacopœia, potash alum was the official article. Previous to 1864 or 1865 it was exceedingly difficult to meet with potash alum in commerce; nearly the whole of the commercial alum was ammonia alum; and it was not a little singular that about that time potash alum again made its appearance in commerce, and he had been several times supplied with it in the ordinary way commercially. He attributed that to the production of chloride of potassium from mineral sources, which had reduced the price of potash, and so enabled it to compete with ammonia. It was said in the Pharmacopœia that the aqueous solution of alum should not acquire a blue colour from the addition of yellow or red prussiate of potash. Now he had never yet met with a specimen of commercial alum which would answer that test, and it was by no means an easy matter to get alum entirely free from iron. Referring to oxide of antimony, it was stated to be "a greyish-white powder." Several specimens which he had found in commerce had been much more strongly coloured than this description would seem to justify. He believed that oxide of antimony, when quite pure, instead of being greyish, was quite white, and that the colour invariably depended upon the presence of iron. They could easily see how this got in. The black sulphide of antimony, he believed, invariably contained iron; and if they went to work with chloride of antimony, that was still subject to contain iron. When the solution of chloride of antimony was poured into the distilled water, a portion of the iron was carried on mechanically with the oxide and chloride of antimony, and could not be removed by washing, and therefore was present in the final product. But there were several ways in which this might be got rid of. He had succeeded pretty well by washing the precipitated oxide and chloride of antimony with dilute hydrochloric acid for a considerable time. There was another thing with regard to the washing of the oxide. After it had been treated with carbonate of soda, and it was difficult to eliminate the last trace of chlorine, he had washed the oxide almost continuously for three days, and still there was presence of chlorine. The oxide of antimony was carried through the filter in a state of extremely minute division, and the washing water remained opalescent for several days before the oxide of antimony was pure. Although the "antimonial powder" was an improvement, yet it was, and always would be, uncertain, and therefore a dangerous medicine. He was strongly impressed with the conviction that in some cases it met with acid in the stomach, and was so converted into a poisonous salt, which often caused, even in small doses, very dangerous catarrhs. There was a question he should like to ask Dr. Redwood with regard to chloroform. It had been said that an article might be prepared from methylated spirit which was as pure as that made from ordinary alcohol. He should like to ask Dr. Redwood whether he had ever met with such a specimen. He (Mr. Bland) confessed that for his own part he had not. It was quite true the disagreeable smell derived from methylated spirit was not easily detected, but, if it be dissolved in a sufficient quantity of spirit to be miscible with water, and then a small quantity of alkali added, it became perceptible; and if that be so, he would suggest whether it should be confined to use for outward application. With respect to sulphate of copper, the same remarks applied as he had made with reference to antimony. He had never met with it quite free from iron. He did not refer to what was commonly called agricultural sulphate, which was purposely mixed with iron; but the sulphate of copper sold as pure, which contained an appreciable quantity of iron. That was the case with regard to that which was made at the Mint, where it was produced in large quantities. He did not understand how the iron got in there, but he had never yet found it without more than a trace of iron in it. With regard to the preparations of colocynth,—the compound extract and the colocynth pill,—he had found these a source of very considerable perplexity; and it very often happened that a prescription might come into their hands respecting which they were in doubt whether the writer of it belonged to the old *régime* or the new. In fact, a short time since he had a conversation with a physician, with whom he had the honour of being on terms of familiarity such as would entitle him to ask a question of the sort, and he asked him what he meant when he ordered colocynth. Of course, he replied, the British Pharmacopœia preparation. Then he (Mr. Bland) said, "Suppose you have got a box of pills which have been made from your prescription, if it smelt strong of oil of cloves it would be all right?" "No," he said, "it would be nothing of the kind." It was easy to see how this had arisen. They had now in the British Pharmacopœia an extract of colocynth and colocynth pill, which were very likely to be confounded; and he was certain that a large number of medical men were not aware of the difference between the two preparations. Now, with respect to the subject of quinine, if the fifteenth section of the Pharmacy Act was to be strictly carried out, he feared that there was not a gentleman in that room who would not be subject to a penalty of £5. He was quite aware that the British Pharmacopœia said that sulphate of quinine *might be prepared* by following the process given; he was also aware that in the preface still more distinct permission was given to use chemical substances which, although not prepared according to the formulæ of the Pharmacopœia, would answer to the tests; but if he turned to the fifteenth section of the Pharmacy Act, which would override the Pharmacopœia, its preface, and the Medical Council altogether, he found there that "any person who shall compound any medicine of the British Pharmacopœia otherwise than according to the *formularies* of the Pharmacopœia should be liable to a penalty of £5." He hoped that would not be enforced. He was guilty himself every day of his life of using sulphate of quinine which he was sure was not made according to the Pharmacopœia process. Some time ago he made a number of experiments for the purpose of devising a cold process for making sulphate of quinine, and he was sorry to say that the conclusion to which he came was, that it was not possible to do that economically; that the utmost amount of tolerably pure sulphate of quinine he ever got from it was something less than 3 per cent. He had once obtained 2·6, but then he went to work in a somewhat different way from that described in the Pharmacopœia. He believed if those directions were followed it would be quite impossible to exhaust a pound of bark with the quantity of acidulated water which was there mentioned. In the first place, they were directed to take yellow cinchona bark in coarse powder. It appeared to him that it was utterly impossible that the process of percolation could be followed out with advantage with such substances as bark unless the bark were reduced to a tolerably fine powder, so as to thoroughly disintegrate and break up the cells, otherwise a large portion of the soluble matter would remain locked up, as it were, in the interior of the cells. It seemed to him that the quantity of hydrochloric acid mentioned was larger than was necessary; and this, he conceived, was also a defect in the process. And with regard to the use of distilled water, he considered that an unnecessary refinement, as the very small portion of lime and other matters contained in ordinary water was sure to come out in the purification. He had found it necessary, in order to exhaust the bark, to do something in this way: after the first portion of the stronger solution had run off, he had an intermediate process. It was necessary that the solvent should be in actual contact with the bark for some considerable time; and if the process was carried on continually, an immense quantity of the acidulated water must be used to exhaust the bark. By that means he had succeeded in practically exhausting a pound of bark with not much more than a gallon of water. He then evaporated that at a low temperature, not exceeding 150° F., keeping it nearly neutral by successive additions of small portions of chalk or lime, until the whole liquid was reduced to somewhere about a pint. By this means, nearly the whole of the colouring matter fell down insoluble, and was separable by filtration. After that, the precipitation of the alkaloid and its subsequent combination with sulphuric acid were easy matters. There were several other matters of interest, but he felt reluctant to occupy so much of their time. He would only refer to the solution of chloride of gold. That was inserted in the Pharmacopœia as a chemical test, and not as a pharmaceutical substance; but he thought the formula was objectionable with respect to the enormous quantity of acid which was directed, which he could only conceive had crept in by a clerical error, as it was certainly six or eight times as much as was necessary to dissolve the gold. They were told to take fine gold reduced by a rolling machine. He supposed that to get fine gold they should go to the refiner's, and he had found that what they called fine gold invariably contained as much as 3 or 4 per cent. of silver. He considered it quite needless to reduce gold by a rolling machine. He thought the best method of procuring gold for their purpose was to take Australian sovereigns,—that was what he had been in the habit of doing himself,—and to reduce it by solution in a Florence flask in acid. All that was required was to dilute the solution in order to get rid of a large amount of chloride of silver, which was taken up by the strength of the acid. Before he sat down he should like publicly to express his sense of the great kindness and courtesy with which he had always been met, not only on this, but on every occasion on which he had come in contact with Dr. Redwood.

NOTES ON THE PHARMACOPŒIA.

BY WILLIAM MARTINDALE,

DISPENSER, AND TEACHER OF PHARMACY TO THE UNIVERSITY COLLEGE HOSPITAL.

As we are invited to bring before these meetings suggestions regarding improvements, or necessary alterations in the formulæ of the Pharmacopœia, I beg leave to draw your attention to one or two this evening.

LIQUOR ATROPIÆ.—*Liquor atropiæ* and *liquor atropiæ sulphatis* are neither of them satisfactory preparations. The formula for the former will not yield a perfect solution of the alkaloid, and the quantity of spirit it contains is such that it frequently causes a considerable amount of irritation when this solution is dropped into the eye. The objection to *liquor atropiæ sulphatis* is, that being a difficult salt to crystallize, the authorities have given a formula for its preparation that yields it in a colloid state. In this condition its composition, as found in commerce, is very variable, on account of the different states of hydration in which it may exist when "evaporated to dryness," and the necessary long-continued application of heat, I think, partially decomposes it; as thus obtained, it is generally deliquescent on exposure to the air, whereas, in the crystalline condition it is not so. Being thus unstable and indefinite, it will not yield a solution of uniform strength.

I would suggest that the two formulæ be blended into one, giving directions for the solution to be made by dissolving 4 grains of the pure alkaloid in an ounce of distilled water, using, as a solvent, diluted sulphuric acid in sufficient quantity to neutralize it. Taking *liquor strychniæ* as a precedent, it might be named simply *liquor atropiæ*. It would be the same strength as the present *liquor atropiæ*, and slightly stronger than *liquor atropiæ sulphatis*.

I have been in the habit of making *liquor atropiæ sulphatis* in this manner, and I find that practically 52 grains of the alkaloid, which I estimate are equal to 1 drachm of the sulphate, require from 60 to 65 minims of diluted sulphuric acid, with the addition of water, heat being applied, to form 15 ounces of a neutral solution of B. P. strength. Thus prepared, I have not observed in it any liability to undergo decomposition, but have not tested it for any great length of time.

The Prussian and Austrian Pharmacopœias make officinal the crystallized sulphate of atropine, giving no formula for its preparation.* They merely describe the crystals, their characters and tests. I suppose that in Germany it is an article of commerce in this condition, but from its mode of preparation, necessarily much more costly than the alkaloid itself.

The solutions of active medicinal agents in the present Pharmacopœia, have been made of the uniform strength of 1 grain in 120 minims; as there is a tendency to decimalize the proportions, I think it would be preferable to have them containing 1 per cent. of the active ingredient. The French Codex has Fowler's solution of this strength.

MUCILAGO TRAGACANTHÆ.—The manipulation directed in the formula for *mucilago tragacanthæ* does not yield satisfactory results. The particles of the powdered gum swell so rapidly when moistened, and their cohesion in this condition is such, that before each can be sufficiently separated to obtain its portion of the fluid, they get agglutinated into masses, the centres of which generally consist of dry powder, that, in preparing it in quantity, it takes days before the gum is "perfectly diffused" through the fluid.

A better plan, adopted by many dispensers for making it extemporaneously, is the following:—Put the powdered tragacanth into a dry bottle, capable of holding double the quantity of mucilage required, and moisten it with a little spirit of wine. Then pour in the water, and agitate until a homogeneous mucilage is obtained.*

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* "Prismata gracilia, tenuia, nitida, in aëre constantia, in aqua et in spiritu vini facile solubilia."—Pharmacopœia Borussica, 1862.

If British manufacturers will supply it possessing these properties, the above formula which I have suggested will be unnecessary. I have not been able to meet with any that was not deliquescent, and, although I find, since writing the above, that the microscope does reveal traces of a crystalline formation in some samples, yet even these I consider were anything but definite in composition.

OTTO *vice* ESSENTIAL OIL.—There is one change in nomenclature I would like to suggest. The terms *oleum* and *oil* are applied indiscriminately to fixed and volatile oils. Now these fluids possess few characters in common, except that neither are soluble in water, but the same may be said, in common parlance, of chalk and cheese. In several of the Continental Pharmacopœias *ætheroleum* is used to designate volatile oils, but it is not a very euphonious term. Mr. Piesse, in his 'Art of Perfumery' suggests, with some show of reason, that the term *otto* should be made generic for these oils, instead of being applied exclusively to otto of rose. We would thus have *otto lavandulæ* and *otto of lavender*, in place of *oleum lavandulæ* and *oil of lavender*. There ought to be some distinction made between a fixed and a volatile oil, as in some cases confusion is likely to be created. To give an instance, a pharmacist might have to dispense a prescription for an ointment, in which *olei amygdalæ q. s.* was ordered. The question would naturally arise in his mind, is it intended to perfume it, or to enable me to mix some dry powder more thoroughly with the basis of the ointment? I scarcely expect such a radical alteration in nomenclature to be adopted, but throw out the idea for your consideration.

I agree with Dr. Redwood, that we must try to follow "the spirit of the instructions in the Pharmacopœia," but in some instances the language is so authoritative, that it is impossible to be both loyal and practical. I allude more particularly to the mode directed for making the ordinary tinctures. How many pharmacists are always loyal in making these? I grant there is a difficulty in giving directions for their preparation, which will yield them always uniform, and, as many of them are very active medicinal agents, there should be as little variation in their strength as possible. I like percolation pure and simple, but it is percolation of my own kind.

The tendency of modern therapeutics is to rely on the action of definite remedies and simple preparations, rather than on complex mixtures, and in this direction there is still room for improvement. For what purpose is such an expensive colouring-agent as saffron still retained in many formulæ? It should be remembered that it is suffering humanity the medicines are intended to cure or relieve—not to act as *placebos* merely. They are for the poor as well as for the rich, and the Pharmacopœia should be *national* in every sense of the word, so that the dispensary and hospital could be just as loyal to it as the West-end chemist.

University College Hospital, February 2nd, 1870.

Mr. WILLIAMS said that in the course of his experience he had had samples of solution of atropia in sulphuric acid returned, which had been declared to give great pain when applied to the eyes. He thought the use of sulphate of atropia preferable, for when a solution was made in that way there was less pain in using it than when atropia was dissolved in sulphuric acid.

Mr. MARTINDALE remarked that he always got his solution by aid of sulphuric acid perfectly neutral.

Mr. HASELDEN hoped he might be excused if he referred to a part of the subject which bore upon the language in which the Pharmacopœia was written. He had always been an advocate for the Pharmacopœia being written in Latin, because it was his opinion that it could be more generally read and understood on the Continent in Latin than if it was in English. That was his principal reason, but now he had another reason, and it was this,—it seemed to him an anomaly that, at the present time, when they were so highly educating their young people, they should write the Pharmacopœia in English; whereas formerly, when they were not so highly educated, the Pharmacopœia was written in Latin. There could not, in many respects, be anything better than the old London Pharmacopœia. Dr. Redwood's excuse for putting it in English, and certainly it was a good reason, was this,—that they could explain their meaning in English much more explicitly than they possibly could in Latin; but he (Mr. Haselden) thought that might be overcome, as on former occasions, by giving translators the opportunity to make translations in English, and also to give a great many valuable and necessary remarks, which they had not the same opportunity or the same encouragement to do, now that the Pharmacopœia was published in English. Referring more particularly to the editorial part of the work, he said that he had formerly suggested that the decoctions in the Pharmacopœia should all be ordered of one uniform measure, and in the present edition that was carried out with regard to decoctions; but when he turned to the mixtures, he found, what appeared to him, he would not say an error, but an inelegance. The formula for mistura ammoniaci gave 8 ounces, being half a pint old measure, while that for mistura amygdalæ gave 20 ounces, or a pint new measure. Then mistura creasoti gave 16 ounces, a pint old measure, and he might remark in passing, that the same quantity of spirit of juniper was ordered in 1864 as in 1867, although the juniper spirit was five times as strong in 1864 as it was in 1867. Probably that was an oversight. Again, in mistura cretæ they had the old measure, and in mistura ferri composita the new measure. With reference to mistura scammonii, he thought it might very well be expunged from the Pharmacopœia altogether. It was very rarely ordered, and when it was, it was generally for a child, but he did not know why they should deluge a child with two ounces of liquid, when a little egg would answer the same purpose. They had formulæ for three or four mixtures constructed according to the old measure, and others according to the new. In these days, when they were desirous of being very particular, and when some gentlemen were anxious to carry out the decimal system, he thought it would be better if they were to bring all to one standard, and if the measures were all imperial they would be decimal. There was one preparation in the Pharmacopœia which he should like to see altered in some way or other, and that was the belladonna plaster. They were directed to take a given quantity of extract and a given quantity of spirit, rub them together, allow the insoluble part to subside, to pour off the clear liquor, and after removing the spirit by distillation or evaporation, to mix the extract with a certain quantity of resin plaster. Now the strength of the plaster must necessarily vary, depending very much upon the state of hydration of the extract itself. The more water they had, and the more they reduced the strength of the spirit, the larger probably would be the proportion they would have in solution. There were no directions given as to time, it might be an hour or twelve hours; so that it appeared to him to be a very imperfect kind of preparation. Several suggestions had been made about that, and some of them were very good ones, but he could not help going back to a very old one of his own, which he threw out some ten or twelve years ago—that if there must be belladonna plaster, why not make it at once with atropia? He had given a formula for making this plaster, and he believed that no valid objection had been raised to it. He also suggested, at the same time, that opium plaster should be made in the same way with morphia. They obtained thereby a much cleaner plaster, and if they were to get any effect from opium or belladonna-plaster they would get it in the same way. There was another preparation to which he should like to draw attention, though it was one that was not much used, and that was purified ox-gall. The process, according to the Pharmacopœia, was to mix two pints of rectified spirits with one pint of fresh ox-bile. Now it depended a great deal upon the condition of the bile whether they required two pints of spirits, and why should they employ more than was necessary? He felt satisfied, from experiments he had made, that if they were to strain the gall and evaporate it down at once, and then just use as much spirit as would dissolve out all that was soluble in the spirit, throw the rest away, and distil off the spirit, evaporating the remainder, they would get an extract quite as good, with less waste of spirit.

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* This mucilage on account of its greater viscosity would suspend the chalk in *mistura cretæ* much better than mucilage of gum arabic, but gum arabic may have a therapeutic action in the mixture which the other would not.

Should it be thought that a dispenser, according to the strict letter of the Pharmacopœia as it now stands, would not be justified in making the above addition of spirit, any spirit or tincture which might be prescribed along with the mucilage in a mixture, will answer the purpose, even if it be a proof spirit tincture, provided this be put into the bottle first, and the powdered gum added and thoroughly diffused through it before the addition of water.

Mr. **Hills** remarked that his experience differed from that of Mr. Bland, with respect to medical men not following the directions of the new Pharmacopœia. He had found that those who prescribed according to the old Pharmacopœia were the exception.

Mr. **Tupholme** corroborated the remarks of Mr. Bland, and said that many physicians still prescribed by the old Pharmacopœia.

The **Chairman** could hardly suppose that the debate on this very important subject would be concluded that evening, and therefore, perhaps, Dr. Redwood would reply to the various points that had been brought forward, so as to clear up the discussion as they proceeded.

Dr. **Redwood** said that a great number of subjects had been brought forward on this and the previous occasion, upon some of which he was quite prepared to offer remarks, whilst with reference to others he should be glad of an opportunity to arrange his ideas before offering them to the Society. Having, therefore, been called upon by the President, and as it might conduce to the further discussion of this subject, if it should be thought desirable to adjourn the discussion again, he would, with permission of the meeting, just pass in review some of the points which had been brought forward, as far as he could recall them. At the last meeting the discussion principally turned upon some four or five preparations of the Pharmacopœia. Linimentum potassii iodidi cum sapone had been a prolific subject for comment by those who had been practically called upon to prepare it. He had felt for some time past that the instructions given in the Pharmacopœia were not sufficient to ensure uniform results in the preparation of this liniment. It was a new preparation, and dispensers were left to make it up, to some extent, according to their own individual judgment, yet it had been found that by varying the conditions, even if the ingredients were the same, the results materially differed in appearance. He thought that Mr. Martindale had thrown out a proposition which was worthy of consideration,—namely, that in order to get a uniform and generally pretty satisfactory result, the solutions, when mixed, should be both at the same temperature, and that not the ordinary temperature of the air, but considerably warmer. So far as he had been able to judge, that appeared to be the best method of getting a tolerably uniform, and perhaps the most satisfactory result that they could obtain with the present formula. But when a new Pharmacopœia came out, he felt assured that the formula would be very materially modified. As he had stated on a former occasion, it was introduced into the Pharmacopœia at the suggestion of a member of the medical profession, who had been for many years accustomed to prescribe it, and who valued it greatly. It had been long prepared by a pharmaceutist from whom the process, as it appeared in the Pharmacopœia, was obtained. Another of the preparations that was brought under their notice at the last meeting was the liquor magnesiæ carbonatis. He thought he might say that the general feeling seemed to be in favour of the proposition that he threw out, that the strength of that preparation should be altered by reducing it; and a gentleman who had had very great experience in reference to it, perhaps more than any other in this country, seemed to justify the strength that had been proposed. It was true that he had remarked that the strength now indicated in the Pharmacopœia was an unfortunate one, but perhaps he (Dr. Redwood) might be pardoned for saying that if it was unfortunate, the Committee were led into the error very much from the great anxiety they manifested to make it as nearly as possible such as it had been sent out from a house with which that gentleman was connected. Many years ago, when fluid magnesia was not so much used as it was at present, there were two competing manufacturers, each of whom was endeavouring to induce the public to believe that his preparation was the best because it was the strongest, and these were Mr. Dinneford and Sir James Murray. It might be twenty years ago, or more, that he (Dr. Redwood) had examined Dinneford's fluid magnesia, and he found it to contain thirteen grains of carbonate of magnesia in the ounce; and having published such result, with a statement that this might be taken as a type of what the preparation should be, it was constantly advertised by the manufacturer with a reference to his analysis as an indication of what that preparation was. When it was thought desirable to introduce this fluid magnesia into the Pharmacopœia, he really did not feel that, in the face of that oft-repeated representation, they would have been justified in recommending the use of a preparation weaker than that, or they would have been subject to the imputation that they were not up to the mark. That really was the reason why they fixed upon that particular strength. Other preparations were referred to at the last meeting. Mr. Bland made reference to the greater strength of the tincture of calumba of the British Pharmacopœia than that of the London Pharmacopœia. He also referred to an alteration of the formula of the London Pharmacopœia for ceratum resinæ. Now these remarks, with reference to alterations of this description, did not apply merely to the present edition, but to the previous edition of the Pharmacopœia—the first that was brought out,—and it must be recollected that the Medical Council had a very difficult duty to perform, in reconciling medical practitioners in England, Scotland, and Ireland to one uniform set of preparations. In some cases they decided to follow the London Pharmacopœia, in others the Edinburgh, and in others again the Dublin. He did not know from what cause, but he must confess that in a very great number of instances English and Scotch processes had given place to the Irish. This had been complained of by medical men in this country, and in the last edition of the Pharmacopœia some of the displaced London processes had been restored, but this was not the case with tincture of calumba and resin ointment, nor could it be expected that it should be so in all instances. It did not appear to him that the slight difference between the present formula and that of the London Pharmacopœia for unguentum resinæ was material, or need be made subject of complaint. It was now ordered to be made of resin, wax, and simple ointment, whereas the London formula was resin, wax, and oil. Mr. Bland also referred to acetum scillæ, and objected to the process given for it. In the first edition of the British Pharmacopœia this preparation was omitted, but at the suggestion of many medical men, who represented that they were in the frequent habit of using it, it was reintroduced. It was originally ordered in the three Pharmacopœias of England, Scotland, and Ireland; in two of the processes so given, spirit was ordered, and in the other it was not. They took the process of the London Pharmacopœia with spirit; but he must admit that he considered Mr. Bland's objection to the use of spirit a just one, and he should himself in future advocate the omission of the spirit as being not only unnecessary, but rather contributing to the decomposition of the preparation than otherwise. He would proceed, in the next place, to make some remarks with reference to what had been stated on the present occasion. Mr. Bland had alluded to alum as ordered in the Pharmacopœia. For the first time, the present edition directed the use of ammonia alum instead of potash alum, which was previously ordered. He was not aware, until informed by Mr. Bland that evening, that potash alum had again made its appearance in commerce. At the time the Pharmacopœia was under preparation, and at various times, he had tried to obtain potash alum, and had entirely failed to do so. At one period it seemed to have gone wholly out of commerce. There was no doubt that ammonia alum was quite as good for all the purposes to which it was applied in pharmacy as potash alum; and if both were in commerce, he thought they were justified in ordering that which was most generally to be met with. Then with reference to iron, certainly there might be minute traces of iron in most specimens of alum as met with in commerce, but they ought to stand, and generally would stand the tests given in the Pharmacopœia. They had endeavoured to arrange the tests generally throughout the Pharmacopœia with the understanding that it was not necessary to look for chemical purity in the substances used in medicine. If it were to be obtained, they would generally have to obtain it at a cost which was very disproportionate to any advantage which would result from it. At the same time tests for objectionable contaminations were given, and any appreciable amount of iron would be objectionable in such a salt as alum. With reference to Mr. Bland's remarks on oxide of antimony, all he could say was that he thought the description given in the Pharmacopœia exactly represented the article as it would be produced in the ordinary way, as an article of chemical manufacture. He had never himself obtained oxide of antimony by precipitation in a perfectly white state, and such a result would be perfectly new to him. Then Mr. Bland had referred to the subject of chloroform, and had inquired whether it could be made from methylated spirit, so as to be as pure and as fit for medicinal use as that made from pure spirit. First of all, he (Dr. Redwood) would say, that the Pharmacopœia did not in any case recognize the use of methylated spirit, and it indicated, in reference to this preparation especially, rectified spirit as the source from which it was to be obtained. But the question having been put to him, he would reply to it to this effect: that at the Exhibition of 1862, there were a great number of samples of chloroform exhibited, some prepared with pure spirit and some with methylated spirit, and the jury who had to examine and report upon these preparations, devoted a great deal of time to the examination of the specimens of chloroform, with the view of ascertaining whether they could detect any difference between that made from pure spirit and that made from methylated spirit, and the conclusion they came to—and he was a member of the jury,—was that there was no difference to be detected by any method of examination that they could resort to. At the same time, he believed that in order to get the chloroform made from methylated spirit in so great a state of purity as those specimens were—and they were specimens which had been sent from a house in Scotland celebrated for the manufacture—very great pains must be taken in the process of purification. But he would state further, that very pure methylated chloroform could be obtained in commerce without difficulty, and some of these specimens, he believed, were fit for medicinal use. Mr. Bland had, further, referred to sulphate of quinine, and the process given in the Pharmacopœia with reference to it. He (Dr. Redwood) knew of no valid objection to this process. Mr. Bland said he had not succeeded in getting more than two or three per cent. of sulphate of quinine from cinchona bark by that process; and he (Dr. Redwood) could only say that if he had succeeded to that extent he had succeeded very well.

Mr. Bland, interposing, said he did not say that he got this result from the process in the Pharmacopœia, but from a cold process of his own. He also stated that he had never succeeded in obtaining so much as 3 per cent. of pure crystallized sulphate of quinine, 2·6 per cent. having been the largest quantity.

Dr. Redwood remarked that it was very well known that, in getting sulphate of quinine, great difficulty was experienced in getting it in a crystallized state; indeed, it was rarely the case that anything near the full amount that was capable of crystallization could be got in that state as an analytical result in operating on small quantities. Therefore, if Mr. Bland had succeeded to the extent indicated, he had really not succeeded badly. But he did not consider it important, with reference to such a substance as sulphate of quinine, that the process given in the Pharmacopœia should be the best practical process that could be given. It was just one of those cases in which, if it had been left to his judgment, he should have given no process at all; but the members of the Pharmacopœia Committee thought it desirable to give processes in such cases, although they did not insist upon their being used, so as to indicate methods by which the articles referred to might be produced. Sulphate of quinine was an article the manufacture of which would be only in the hands of those who made it upon a large scale. Mr. Bland had also referred to the process in the Pharmacopœia for obtaining chloride of gold, and he (Dr. Redwood) must admit that the process was, in one respect, an absurd one; that was in ordering much more acid than was required for dissolving the gold. Of course it would yield chloride of gold, but it would yield it at the cost of more acid than was necessary, and therefore in that respect it ought to be altered. How that quantity of acid came to be indicated originally he could not tell. He then referred to two or three points alluded to by other gentlemen; and, first, he confessed his indebtedness to Mr. Martindale for some of his valuable practical remarks, and he felt the same also with respect to Mr. Bland. But he considered some of Mr. Martindale's remarks to be of special value, particularly that which related to the mucilage of tragacanth. So far as he could judge, the method of manipulation suggested, although a very slight modification of that at present contained in the Pharmacopœia, was a great improvement, as it afforded the means of obtaining the result very much more readily. Mr. Haselden had taken exception to the fact that the formulæ in the Pharmacopœia were not all framed according to one type,—that, if they took the mixtures, the quantities ordered to be produced were not all the same; that some of the formulæ were evidently constructed at a time when the 16-ounce pint was in use, and others when the 20-ounce pint was in use. It would certainly have contributed to the general uniformity of the Pharmacopœia if a greater amount of consistency in that respect had been carried out and maintained. In some cases they had done so—as, for instance, with reference to the decoctions and infusions; the decoctions especially had been brought up to one general quantity; but there was more difficulty in reference to the mixtures, and an insuperable difficulty would arise in some cases, without complicating the formulæ. This would be seen at once in attempting to alter the formulæ for mistura creasoti and mistura cretæ from eight to ten ounces. Of course it would not be contended by Mr. Haselden that any practical inconvenience arose from the present quantities being ordered. With regard to emplastrum belladonnæ, he would only say that the alteration made in the present edition of the Pharmacopœia simply consisted in this, that instead of putting the given quantity of extract of belladonna into the plaster, they took the active matter of the extract in the form in which it made a much more homogeneous plaster than it otherwise would; and, if the present plaster was subject to variation of strength, the old one was equally so. Most present were no doubt aware that Mr. Balmer had recommended belladonna plaster in which an alcoholic extract, prepared from the root, was used instead of the extract made from the leaves; but it remained to be seen what advantage, if any, this presented. Whether atropia should be substituted for the extract was a question upon which he was not prepared to enter then. He thought, however, they must not be too hasty in coming to the conclusion that those preparations which were of an indefinite character were not deserving of confidence in the treatment of disease. He could not altogether draw a distinction between the use of those substances which were administered for therapeutical purposes and those which were administered for dietetical purposes; and he would ask them to consider what they would say to the proposition, if such a one were made, that nothing was to be used in the shape of food that was not of a perfectly definite chemical nature? Were they to use only pure fibrin, and the other constituents of food, in definite combination one with another, and to reject such things as a piece of indefinite meat, especially when rendered more indefinite by a process of cooking? That, however, was a very broad subject, which he could not enlarge upon at that late hour; but he might be tempted to enter more fully upon it on a future occasion.

Dr. **Attfield** thought the discussion of this interesting subject of the Pharmacopœia should be again adjourned. There were various phases of the matter which had not been alluded to, and he had no doubt there were many chemical manufacturers who would be anxious to contribute information upon different points. There was also a large class of persons who were always more numerously represented at these meetings than any other—namely, the students, who he thought ought to express their opinions upon this matter.

The **Chairman** thought, with Professor Attfield, that this subject was of such great importance that it should be adjourned and resumed at a future meeting. Perhaps this subject had never been brought before them in a more complimentary manner than on this occasion,—the editor of the Pharmacopœia having, as it were, been the means of conveying to them a message from the Medical Council that this Society should be invited to give them their practical experience of the working of the Pharmacopœia. He hoped, therefore, that this opportunity would not be lost of showing to the medical profession and the world that they were competent to manage their own affairs, and to direct the medical profession as to the best way of preparing medicines for use.

The meeting then adjourned, and it was understood that the discussion would be resumed on the 2nd of March.

PHARMACEUTICAL SOCIETY, EDINBURGH.

At the meeting held in St. George's Hall on Tuesday evening, the 11th of January, Mr. **Aitken**, President, in the chair, the following paper was read:—

"On the Animal Substances used in Medicine." By Professor Archer.

I propose in this paper to give a slight sketch of a number of animal substances used in the pharmacy of this and other countries, chiefly for the information of our younger members, and perhaps also to revive the memory of those more advanced with respect to a class of substances which are daily losing their importance.

Taking them in their zoological order, I begin with the lowest or invertebrate division, and first among these, the sponge. This animal production is thus described in the work of an eminent French writer, M. Moquin-Tandon, recently published:—"Sponge consists of the aggregation of animals belonging to the class of polyps;" "That these polyps exist only in the interspaces of the fibrous mass." This opinion is not generally held in this country, for many zoologists suppose the fibrous mass and its gelatinous coating to constitute one animal. The economical value of the animal has, however, little or no reference to the animated gelatinous mass, but to the fibrous framework which supports and distends it. This, besides its now only use for cleaning purposes, was formerly, when incinerated, known under the name of *Spongia usta*, which was held to be valuable in cases of scrofula, glandular swellings, etc. Analysis showed that the only constituent which could be of any service in such complaints was the iodine sometimes present. Therefore that substance, in one form or another, has displaced the sponge.

Coral, that is the red coral (*Corallium rubrum*), has only lately disappeared from the shelves of British pharmaceutists, and is not altogether discarded from those of France and some other countries, where, under the mistaken supposition that the colouring matter is due to the presence of iron, it is regarded by a few as a useful tonic and astringent. In Britain, the latter quality was the only one imputed to it during its last days; but as that was seen to be due only to the carbonate of lime contained in it, chalk-coloured pink was first substituted for it, and finally prepared chalk without the colour and name has superseded it entirely.

The order of insects still holds an important position in the Materia Medica, and in describing some of its principal products, I shall purposely omit those of the bee and the gall-producing cynips, as also, when speaking of the order of fishes, I shall leave out isinglass; because these three subjects are of too much importance to be treated so shortly, and will each furnish me with material for a future paper.

First in therapeutic value are the various blistering insects, and chief amongst these the Spanish-fly (*Cantharis vesicatoria*), which has long been justly regarded as the best and safest of all counter-irritants, besides having well-recognized value in some cases as an internal remedy. They are called Spanish-flies because Spain furnishes an abundance of them, but they are found also in many parts of Europe, and even occasionally in the south of England. The specimen I show you is from Hungary, and is of very fine quality. Of late years two species of *Mylabris*—*M. pustulata* from China, and *M. indica* from the East Indies, have found their way into European pharmacy. The discovery by Roubiquet of the active vesicating principle cantharidin, in the true cantharides, may probably lead to the very extensive use of these and allied species for the production of this valuable and more convenient vesicant. Many other vesicating insects are known, as—

Cantharis cinerea.
C. atrata.
C. vittata.
C. marginata, American.
C. ruficeps, Sumatra and Java.
C. gigas, India.
C. violacea, India.
C. Syriaca, Arabia.
C. atomaria, Brazil.
Cetonia aurata, Europe.
Mylabris cichorei, *Fabricius*.
M. variabilis, *Pallas*.
M. oleæ, *Chevrol*, of the olive.
M. cygnescens, *Illiger*.
Meloe proscarabæus, *Linn.*, common over a great portion of England.
M. rugosus, *Marsh*.
M. maialis, *Linn*.
M. autumnalis, *Oliv*.
M. variegatus, *Donav*.
M. Algeria, *Linn*.
M. Tuccius, *Hoffm*.
M. coccarius, *Hoffm*.
M. punctatus, *Oliv*.
Cerocoma Schæfferi, *Fabricius*, and other species.

Doubtless many others may be added to these, especially of the genus *Mylabris*, and will some day or other be found valuable sources for cantharidin.

Amongst the Chinese there is in use a curious drug, consisting of the dried skins of an insect, apparently a hemipterous one, or if not, a very thin-skinned coleopteron.

The cochineal insect, *Coccus cacti*, formerly had great repute as a remedy for hooping-cough, and still has its votaries amongst the ill-informed. It is to the man of science far more interesting as a source of one of our most beautiful dyes, and a favourite colouring-matter in pharmacy; so that, although its therapeutic value is gone, it still holds its own in our pharmaceutical preparations. The insect is originally a native of Mexico, but owing to a number of interesting circumstances it has found its way to other parts of the world, amongst which are conspicuous Madeira and Spain, in both of which countries it is cultivated, in the former very successfully; in the latter also there is reason for belief that it will, in more settled times, become a valuable industry, as the cactus thrives luxuriantly in all the southern provinces, where it and one or two allied species are used commonly to form hedges, and their fruits are found in the markets in extraordinary abundance. There are two commercial varieties of cochineal, but they are one and the same species, differing only in the mode of preparation for the market.

Leeches can hardly be regarded as animal substances; nevertheless they merit mention in connection with the other zoological features of the Materia Medica. The consumption of the animal is something enormous, and although in former times it was doubtless found in most European ponds and lakes, so completely are those near to us exhausted that the Hamburg dealers, who are our principal suppliers, are compelled to obtain them from the very centre of Russia. It is believed that England and France take about 200,000,000 of these animals annually, representing a trade of about £400,000 sterling. I mention leeches chiefly to notice an interesting specimen of the cocoons formed by them for the ova, which belongs to the Warrington Collection in the Museum of Science and Art.

The order Crustacea has almost disappeared from our Materia Medica; it, however, still has a prominent representative in our shops in the form of the curious internal shell of *Sepia officinalis*, called cuttle-fish bones, which are chiefly used for dentifrices, for which they are well adapted. Occasionally, too, we find the curious bodies called crab's-eyes (*Oculi cancrorum*) or crab-stones (*Calculi cancrorum*). They are curiously-shaped concretions, chiefly of carbonate of lime, which are found in two lateral pouches of the stomach of the river cray-fish (*Astacus fluviatilis*), but only just previous to the moulting of the animal, or before its shell is thrown off; they seem, indeed, to be stores of mineral matter secreted for the purpose of supplying material for the new shell, as they disappear during its formation. They had a reputation formerly in medicine as antacids, and were prepared for use by being levigated and made into a paste with water, and worked up into small conical shapes, or rolled out and cut into lozenges. As their virtues were found to be due only to the carbonate of lime, *Creta præparata*, or chalk similarly prepared, has displaced them. Thus knowledge simplifies our operations, and instead of sending to the rivers of Astracan for crab's-eyes at an expense of some shillings per pound, we are taught to find at our own doors the same material in another form and in unlimited abundance, as one of the chief constituents of our island home. The claws of the common crab (*Cancer pagurus*) were similarly used.

Rising from the invertebrate animals to those of the vertebrate division, we find the order of Reptiles, which formerly was so important in the absurd compositions of the ignorant empirics of the dark ages, when witchcraft was often allied with the mediciner's art. We no longer place any faith in—

> "Fillet of the fenny snake;"

in—

> "Eye of newt, and toe of frog;"

or even in—

> "Adder's fork, and blind-worm's sting."

and, as far as I know, no reptilian preparation is now found in the drawers or on the shelves of the British pharmaceutist, except sometimes that very rare substance the alligator-musk. But I have mentioned the Order for the purpose of showing that abroad some of the old notions still prevail; and even in Geneva, within the last few years, a medical man has been recommending his patients to eat the small lizard called *Skink* (*Scincus officinalis*), as stimulant and sudorific medicine, as if our Materia Medica did not contain enough stimulants and sudorifics of more easy preparation and agreeable nature than cooked lizards, even if they have such properties.

Fishes yield us nothing but isinglass, to which I have before referred, and the oil procured from the livers of several species. Within the present century cod-liver oil has become a medicine of great importance, though probably not more entitled to it than many other animal and even vegetable oils. It is formed from the livers of the cod-fish, and the medicinal preparation in no respect differs from the commercial cod-oil used largely for lubricating machinery, burning in lamps, and other purposes, except, perhaps, in its more careful preparation, which may possibly render it less offensive to the palate.

The vast quantities imported come chiefly from Newfoundland, where the cod-fisheries are so extensively carried on. When the fish are caught they are split open, gutted, and the livers are collected and taken ashore, where they are either exposed to the sun, and yield the oil as they slowly decompose, or, as I believe, now they are treated more skilfully, in melting-pans with artificial heat. The comparatively small quantity prepared in this country is thus carefully treated.

Besides the cod-liver oil, that made from several species of shark has also obtained some reputation as a medicine, and probably with equal justice; and the same may be said of the liver-oil of the skate and ray, which are sometimes used.

No actual medicinal preparations are obtained from the Order of Birds, but the eggs of the common fowl, or rather the large quantity of albumen contained in them, often proves of great therapeutic value in arresting the action of some of the worst of the mineral poisons, more especially that most dangerous one, corrosive sublimate.

We come lastly to the mammalia, which, as an Order, produces by far the greater number of pharmaceutical substances. The great cachalot whale, one of the largest of its tribe, yields us the spermaceti so much valued in ointments, and formerly as an internal remedy; indeed, in many parts of England, melted with sugar and butter, it is often employed as a domestic remedy for coughs. This substance is the stearine of the oil of this and some other whales, but it exists in this, and more especially in the oil obtained from its head, in the greatest abundance.

This same whale appears to feed at times largely on cuttle-fish and their shells, or bones, as they are called, do not appear to be easy of digestion, for hard concretions are formed in the intestines of the animal, which, when voided, float upon the surface of the sea, and form great prizes to the seamen who are the lucky finders, for they constitute the valuable ambergris of commerce. The delicate odour of this substance appears to be nothing more than the musky odour of the cuttle-fishes' ink, and the same may be perceived in the Chinese India-ink. A slight examination of this material will show the fragments of cuttle-fish bones, plentifully mixed through the mass, especially in the finer qualities of ambergris.

The dugong (*Halicorus Indicus*) has lately been in request for its oil in the Australian provinces, where it has been found a good substitute for that obtained from cod-liver, and some has been sent to this country for the same purposes.

The terrestrial mammalia yield us musk, civet, castoreum, hyraceum, the bezoars, etc.

The first of these is from the small deer-like animal *Moschus moschiferus*, and the history of the substance itself would be very interesting if time would permit me to go fully into it. This, however, is impossible at this late hour; I must, therefore, content myself with a mere mention of this and subsequent articles, hoping for future opportunities to go more fully into their properties, commerce, and the historical facts connected with them. The pods, as they are called, which I show you, are peculiar sacs, one of which is found in each male animal placed in juxtaposition with the prepuce. It has a small orifice, from which it can expel the secretion or musk at particular times, and, if collected after emission, it is called grain-musk, which is not so valuable as that contained in the pod or sac.

The second substance, or civet, is from the civet-cats (*Viverra civetta* and *Viverra zibetha*), though not now used except in perfumery, the two kinds were formerly employed as musk in medicine. They are yielded by two glands, placed as in the musk animal, near the genital organs, but not confined to the male, for they found in both sexes.

Castoreum, from the beaver (*Castor fiber*), consists of glands, situated near the genital apparatus, and long supposed, from their peculiar shape, to be the testes of the animal.

Two varieties, American and the Siberian, are known in commerce, and their use, like that of musk and civet, was always believed to consist in their being powerful antispasmodics.

Hyraceum (*Hyrax capensis*) is a comparatively new substance, consisting, as you see, of an extract-like material, with a strong animal odour, slightly resembling castoreum. It is not clearly ascertained what special secretion it is, but it is now generally thought to be the inspissated urine of the animal.

Bezoars, oriental, from the ibex (*Capra ibex*). These curious rounded calculi have long ceased to have any value in European pharmacy, although Eastern nations attribute great virtues to them, and also to the occidental kind from the Peruvian goat, which are exported from South America to India and China for the use of the Oriental pharmaceutists.

I have now taken a very hurried and superficial glance at the subject of animal substances used in medicines, and I cannot but regret that, at the earnest request of your secretary, I was induced to touch so interesting a topic in such a limited time as I have had. It was to prevent a disappointment on this special occasion; but had I known you would have had so able a paper to precede mine, I should have preferred to let you rest content with that.

Professor Archer illustrated his very interesting paper with a variety of specimens including the musk-deer, civet, and other remarkable productions.

PROVINCIAL TRANSACTIONS.

BRADFORD CHEMISTS' ASSOCIATION.

The Annual Meeting of the members of the above was held in their rooms, Salem Street, on the evening of Friday, the 4th of February; the President, Mr. MICHAEL ROGERSON, in the chair.

There was but a moderate attendance.

The Secretary, Mr. HERBERT G. ROGERSON, gave a *résumé* of the Society's operations during the past year, with especial regard to the primary subject of the "technical" education of students.

The report stated that the work to which the Society set itself immediately on its formation—at the commencement of last year—was that of providing for the associates a series of lectures by a competent instructor upon the subject of chemistry; the "Non-Metallic Elements" being chosen as the theme for a preliminary course, and the services of Mr. George Ward, F.C.S., of Leeds, being secured as the Society's lecturer.

The many indications of success which attended the delivery of these lectures, the increased number of students, and the untiring attention bestowed, induced the committee, at the conclusion of the course, to arrange for the delivery during the summer months of a series of lectures on structural botany. Mr. Louis Miall, of Bradford, lectured upon this subject, which was worked through to the conclusion in a most satisfactory manner.

The second course of chemistry lectures was then proceeded with, Mr. Ward being again the lecturer, and his subject, "The Metals and their Compounds." This course, which has just been concluded, has been attended by a similar amount of success to that which characterized the delivery of the former series.

A class organized by the students for the study of Latin has unfortunately been attended with only a very moderate amount of success—the attendance, from some cause not clearly ascertained, gradually falling off, until some half-dozen individuals represented a once numerically prosperous class.

On the Society's lists for 1869 (the first year of its existence) there are the names of twenty-five members and thirty-three associates, and there appears ground for the hope that the year 1870 will witness a fair augmentation of their number.

LIVERPOOL CHEMISTS' ASSOCIATION.

The Seventh General Meeting was held at the Royal Institution, January 20, 1870; the President, Mr. J. ABRAHAM, in the chair.

A donation to the museum of several samples of drugs from Messrs. Evans, Lescher, and Co., was announced by the Secretary, and a vote of thanks was passed to the donors.

Mr. Maskery, of West Derby, was elected a member of the Association.

The PRESIDENT said that chloral was now manufactured at a moderate price, and was being largely used. He believed that it would be valuable as a sedative rather than as an anaesthetic. He also called the attention of members to the fact that the new schedule of poisons would come into force on the following day.

Mr. CHARLES SYMES, Ph.D., etc., then delivered an address on "Pharmaceutical Honesty."

He divided his subject into two parts. First, those cases in which the public feel that the pharmaceutist acts dishonestly, and himself participates in that feeling, where there is really no ground for such convictions. Secondly, those cases in which dishonesty might be and often is practised, the public being comparatively ignorant of the fact, and the pharmaceutist troubling his conscience very little about it. Under the first head he pointed out several instances, and considered that the cause arose entirely from overlooking the fact that *time*, *ability*, and *responsibility* should be remunerated, in addition to receiving a fair profit on the article sold or dispensed.

Under the second head, Dr. Symes condemned the circulation of counter-bills containing falsehood, and held that the man who circulated such was equally responsible with the propagator of the same; the omission of expensive drugs from a preparation, even though their medicinal value be questionable (saffron, for example); the substitution of one substance or compound for another; and low competition in price, whereby adulterated articles, or those of an inferior quality, were substituted for the genuine or best, etc.

He said that a skilled mechanic would often look with pride and satisfaction on an article when finished. "He didn't care who examined it;" it was good value for money, and "he would like to see the man who could make a better article of the kind." He (Dr. Symes) would like to see a little more of that sort of thing in pharmacy.

In conclusion, he mentioned several instances which could scarcely be designated dishonest perversions to meet prejudice. The addition of a little cassia in distilling cinnamon water usually practised, *bright yellow* aromatic chalk powder, etc.

The President, Messrs. Shaw, Holditch, Wright, Taylor, and others, joined in the discussion, and the meeting closed with a vote of thanks to Dr. Symes, proposed by Mr. Delf and carried by acclamation.

The Eighth General Meeting was held February 3rd, 1870; the President in the chair.

The Secretary announced donations to the library of the 'Pharmaceutical Journal' and 'Proceedings of the Liverpool Architectural Society;' and to the museum of several specimens of drugs, from Messrs. R. Sumner and Co. Thanks were voted to the donors.

Mr. Mason exhibited and explained the use of Smethurst's patent measuring funnel.

Mr. Tate exhibited a new form of Dobereiner's lamp and showed it in action, explaining the action of the spongy platinum.

A short discussion on the subject followed, in which the President and Secretary took part.

The evening being set apart as a microscopical *soirée*, the members adjourned to the tea-room, where microscopes were arranged, and a pleasant hour was spent in examining vegetable structures, some beautiful injected preparations, diatoms, etc. Messrs. Abraham, Holditch, Mason, and Secretary supplied microscopes.

MANCHESTER CHEMISTS AND DRUGGISTS' ASSOCIATION.

The Fourth Monthly Meeting of the session was held in the Memorial Hall on Friday, February 4th; Mr. Councillor Brown, Vice-President, in the chair.

A cabinet fitted with about 150 drawers for holding the materia medica specimens belonging to the Association was presented by Messrs. Woolley, and a vote of thanks was passed to these gentlemen for their very handsome and useful donation.

A "medico-botanical map of the world" was presented by Mr. Barber, of Liverpool.

The Chairman read an extract from the 'Lancet' referring to Mr. Hampson's last paper, and congratulated the Association on the influence it now possessed through the zeal of some of its members. He then called on Mr. Wilkinson to read his paper on "The Additions to the Poison Schedule and the proposed Regulations respecting the Keeping of Poisons."

Mr. Wilkinson, having described the recent additions to the Poison Schedule, went on to say,—

"The schedule now contains a list of articles under twenty-three heads, which may be called 'Poisons by Act of Parliament:' but if we enumerate the 'Preparations,' we shall get a list of nearly eighty articles which come under the provisions of the Act, besides several others, such as paregoric elixir, various kinds of lozenges, etc., which, though comparatively harmless, still contain a certain portion of some of the articles contained in the schedule, and it is very doubtful whether, strictly speaking, they ought not to be classed amongst the 'preparations.' There is no fault to be found with the addition to the schedule of articles specified by name, such as red and white precipitate, because in those cases the meaning is clear and we know what the article is; but when we consider the spirit that animates magistrates, coroners, and authorities of all kinds in any case where a druggist is concerned, and how certainly we are made to suffer if it be possible, it was very unwise policy to add the 'preparations' of no less than six articles to a list already sufficiently difficult of interpretation from the uncertainty as to the articles included in the term.

"In the January number of the 'Pharmaceutical Journal' we are referred to a 'case' on this point, submitted to the Privy Council, and a reply to it, published in the Journal for April, 1869, where the question is said to be determined; but it really amounts to very little, as it gives no authoritative interpretation, but merely states an *opinion*, and leaves the question as to what is or is not a 'preparation' within the meaning of the Act, totally undecided.

"Then in the case of vermin destroyers, which are placed in Part II. of the Schedule, a difficulty arises; seeing that these are generally 'preparations' either of arsenic or strychnine, which require registration, it is very doubtful whether we are safe in simply labelling them 'Poison,' with name and address.

"With respect to the proposed regulations for the keeping and dispensing of poisons, it has been so often argued that an improved education would quite do away with the necessity for these contrivances and substitutes for reading labels, that one could hardly have supposed that the Council would propose their compulsory adoption; but they have done so, and if we country druggists do not oppose them pretty strongly, we shall find ourselves hampered with a series of regulations we cannot possibly carry out. There is not, certainly, much to object to in the first regulation,—that the bottles, etc., be labelled 'Poison,' provided it is not made to apply to articles not really dangerous. The second regulation, relating to the keeping of poisons, is, perhaps, the most objectionable of all. A separate compartment is in most cases quite out of the question, and even if practicable, where is the advantage? Why need opium or ergot be kept apart, or belladonna or aconite leaves be separated from other drugs, and digitalis or hyoscyamus remain? Besides, the danger of mistaking strychnine for morphia, or laudanum for tincture of ergot, would be as great as that of taking strychnine for salicine under the present system, or perhaps greater. The same objection applies to the 'angular, fluted, or corrugated bottles and jars,' with this further one, that the system being applied to *all* the poisons in the schedule, from strychnia to cantharides, and from tr. belladonnæ to prussic acid, the angularities of the bottles and the sandpaper on the jars would become so familiar to the touch that the value of the supposed caution would be totally lost, and mistakes be far more likely to occur than if these special cautions were restricted to really dangerous articles, such as prussic acid, the alkaloids, and a few others.

"If the third regulation, requiring all liniments, etc., to be put into distinctive bottles, could be applied to prescriptions only, there would be no objection to it; but to those who know that the 'dispensing and compounding' which falls to the share of most druggists consists chiefly of a few pennyworths mixed together, it is quite clear the rule could not be carried out in these cases, although it would apply to them just as much as to dispensing a prescription.

"I would not, however, be supposed to condemn the propositions altogether; they all are good to a *certain extent*, but I strongly protest against their having the authority of law, at any rate in their present shape. Had the Council *recommended* their adoption, without attempting to make them *compulsory*, there would have been little objection, but to require the same regulation to be applied in the keeping of every article in the poison schedule condemns the proposal altogether.

"To sum up the matter, we now are in this position: unless we comply with the requirements of the Act, as to labelling and registering the sale of a number of articles not specified by name, we are liable to a penalty of £5; and unless we enter the ingredients of any medicine we may dispense containing any of the said articles, and the name of the person to whom it is supplied in a book kept for the purpose, we are liable. And if the proposed regulations become law, we shall be liable to the same penalty unless

1st, we label every box, bottle, vessel, or package in our stock, containing any of these eighty articles with its own name and the word 'Poison;' 2nd, unless we keep them all separate from other drugs, or keep them in angular, fluted, or corrugated, or in some way different bottles and jars from those containing other drugs; and 3rd, unless in dispensing and compounding we put lotions, etc., in these same distinctive bottles and label them 'for external use,' or words to that effect. So that in point of fact, we are now liable to a penalty of £5 if we sell a Dover's powder or put a pennyworth of laudanum in a cough mixture, and do not enter it in the prescription book; and we shall be liable to the same penalty if we sell a twopenny liniment containing laudanum, or put a drachm or two of tinct. lyttæ into a bottle of hair-wash, and do not put it into an angular or fluted bottle, or if a plain bottle, stick a sand-paper label on it, with a cautionary one besides."

In the discussion which followed the reading of Mr. Wilkinson's paper, much difference of opinion was expressed as to the probable working of the proposed regulations; Mr. Hampson, Mr. Siebold, and some other gentlemen supporting them, whilst Mr. Bostock, Mr. Slugg, and others considered them impracticable.

Mr. Gill (Pendleton) thought it most desirable that the "preparations" intended to be included in the schedule should be enumerated therein.

Ultimately Messrs. Bostock, Benger, Fisher, Hampson, Robinson, Siebold, Slugg, and Wilkinson were appointed a sub-committee to consider the subject and report to the next meeting.

On Friday evening, March 4th, Mr. B. Robinson will read a paper on "Late Hours of Business, and the Effect of such on the Progress of Pharmacy."

THE SHEFFIELD PHARMACEUTICAL AND CHEMICAL ASSOCIATION.

The Annual Meeting of the Members of this Association was held in their rooms, Music Hall, on the evening of Wednesday, January 12th; the retiring President, Mr. Hill, in the chair.

There was a numerous attendance of Members and Associates.

The President, Mr. Hill, delivered the following short address:—

Gentlemen,—This being the first Annual General Meeting of the Sheffield Pharmaceutical and Chemical Association, before asking our Hon. Sec. to read the report, I will remark that I think you will feel with me, that we have great reason to congratulate ourselves on what has been accomplished during the first year of the Society's existence. Had I been told three years ago that the Pharmaceutical Chemists and Chemists and Druggists of Sheffield would be united in a local Association, having such a lecture-room as this, as well as a separate committee-room, with such a large and useful museum, a small but select valuable library, and so excellent a microscope, and that lectures upon chemistry, materia medica, and botany would be delivered to our young men, I really could not have believed it. But, gentlemen, such is the fact; and I rejoice with you that it is so. The passing of the Pharmacy Act, and the establishment of Associations like this, for the education of our future chemists, is the consummation of what we have been for nearly thirty years striving for, and I trust our young men will avail themselves of the means we have so well provided for them. I will now, gentlemen, ask our Hon. Sec., Mr. E. Barber, to read the report.

Report.

In presenting the first annual report, the Council claim the indulgence of the members in recapitulating the circumstances which led to the formation of the Association.

In 1868, the long desired and hoped for Pharmacy Act became law, which necessitated the union of chemists and pharmaceutists in the town and neighbourhood of Sheffield into one Association, having for its objects the promotion of mutual good-will, and general trade interests; the reading of papers, and discussions on subjects connected with pharmacy and collateral sciences; the training and professional education of those who are now required by law to pass the Examinations of the Pharmaceutical Society; and the proper upholding of the Pharmacy Act in the district.

In January, 1869, after many preliminary meetings had been held, a code of rules was agreed upon, and a general meeting of registered chemists was convened, at which a Council, consisting of sixteen members, was elected. The first step the Council had to take was, to procure rooms suitable for the members to meet in, and they were fortunate in securing such in a central position, at the Music Hall, Surrey Street; towards furnishing, and preliminary expenses, the Council and a few other members, in addition to their subscriptions, contributed upwards of twenty-five pounds. In these rooms the Association has met for the hearing of lectures and papers.

Towards the formation of a museum and library, liberal donations, amounting to eighty-six pounds, have been received from wholesale houses; also a number of valuable books, and specimens of chemicals.

Courses of lectures to students have been given as follows:—on "Chemistry as applied to Pharmacy," by G. Harrison, Esq., F.C.S.; "Materia Medica," by G. R. Gowland, Esq., F.C.S.; "Botany," E. Birks, Esq., Lecturer on Botany at the Sheffield School of Medicine.

At the ordinary monthly meetings lectures have been given, or papers read as follows:—on "Payment for Responsibility and not for Material," by Mr. G. Cubley; "The Adulteration of Food and Drink Act, as incorporated with the Pharmacy Act, 1868," by Mr. G. B. Cocking; "The Application of the Spectrum Microscope to the Detection of Adulterations," by H. C. Sorby, Esq., F.R.S.

Several other gentlemen have promised lectures for the ensuing months of the winter session.

An excellent collection of pharmaceutical preparations, and materia medica substances, has been arranged, also a good library of works on chemistry and allied sciences.

A binocular microscope, by Collins, with a Bocket's lamp and reflector, etc., has been purchased, which the Council hope will prove very advantageous.

They respectfully solicit all registered chemists who have not yet joined the Society, to do so at once, as it is only by continued and combined support that it can be carried on. Their desire has been, and they trust that of their successors will be, to form a school for the education of young men intended for the trade, and they would earnestly impress upon such the importance of their attendance at the classes which may be formed; the only aim of the Council being to elevate and the better prepare them for the important duties connected with their profession.

INCOME AND EXPENDITURE FOR THE YEAR ENDING DECEMBER 31ST, 1869.

GENERAL ACCOUNT.

Dr.	£.	s.	d.	*Cr.*	£.	s.	d.
By 54 Members, at 10*s*	27	0	0	To Rent, Gas, Coal, Cleaning Rooms, Postage, Printing, and Advertising	24	11	8
„ 41 Associates, at 2*s*. 6*d*.	5	2	6	„ Balance in hand	10	19	2
„ Balance arising from Lectures	3	6	9				
„ Cash from Secretary	0	1	7				
	£35	10	10		£35	10	10

FURNISHING, MUSEUM, AND LIBRARY ACCOUNT.

	£.	s.	d.		£.	s.	d.
By Special Donations from Members	25	1	6	To Use of St. Paul's School, Printing, Books, Carriage, Furniture, Diagrams, Microscope, Bottles, etc.	81	1	7½
„ Ditto ditto Wholesale Houses	86	11	0	„ Cash in hand to Balance	30	10	10½
	£111	12	6		£111	12	6

TOTAL BALANCE IN HAND.

	£.	s.	d.
By General Account	10	19	2
„ Museum ditto	30	10	10½
„ Microscope ditto	4	18	4
	£46	8	4½

The following officers were elected for the ensuing year:—*President*, Mr. E. Wilson; *Vice-Presidents*, Mr. J. T. Dobb and Mr. G. B. Cocking; *Treasurer*, Mr. Radly; *Hon. Secretaries*, Mr. H. W. Maleham and Mr. Geo. Bennett; *Auditors*, Mr. H. Crawshaw and Mr. Priestley; *Council:* Messrs. Cubley, Hill, Horncastle, Huddlestone, Hudson, Ward, and Watson.

Votes of thanks to the retiring officers during the past year, and to the President for his conduct in the chair, brought the proceedings to a termination.

The Annual Dinner of the members of this Association was held on the 27th January, at the Adelphi Hotel, Arundel Street. Mr. Edward Wilson, the President of the Society, occupied the chair, and Mr. J. T. Dobb, one of the Vice-Presidents, the vice-chair. The attendance was numerous, about fifty, and the dinner was served in a style which reflected great credit upon the caterer. Amongst the guests were Mr. E. Birks, Mr. Allen, F.C.S., and Mr. Skinner, the representative of Messrs. Battley and Watts, London. After the usual loyal toasts had been proposed and honoured, Mr. Hill gave the health of "The Medical Profession," and said he was sure the toast would meet with a hearty reception from all the members of the Association. From the nature of our business operations, we ought at all times to be united in friendly co-operation with the members of that profession, and he trusted the time was not far distant when the general practitioners would leave the dispensing of medicines to chemists and druggists. Previously to the passing of the late "Pharmacy Act," he had had conversations on this subject with some of the leading surgeons of the town, and found they would be glad to give up the dispensing of medicines when the whole of the chemists became an efficiently educated body. The Chairman gave the toast of the evening, "Success to the Sheffield Pharmaceutical and Chemical Association;" he spoke of the success which the London Society had obtained, and said the Sheffield Society was going the right road to success; improvements must come, and he hoped when the older members of the profession in the town retired, the younger members would be more respected, honoured, and worthy than their predecessors.

Mr. Huddlestone responded.

The Vice-Chairman gave the toast of "The Honorary Members," and "Lecturers," and Mr. Allen responded.

Mr. Birks gave the health of "The President," to which that gentleman responded.

Mr. Ward proposed "The Pharmaceutical Society of Great Britain." He reviewed at considerable length its past history. Adverting to its formation, he paid a highly eulogistic encomium on its founder, the late Jacob Bell, Esq. He also showed that had it not been for untiring efforts put forth by the Pharmaceutical Council, the Pharmacy Bill of 1868 would not have been accomplished; especially were they indebted to George Webb Sandford, Esq., for the tact and judgment he had displayed in bringing to an amicable termination the difficulties which existed between the two Bills which were then before Parliament. He believed the Pharmacy Bill would prove a decided success, for already many advantages were resulting to the trade at large, and the general public were becoming acquainted with the true objects of the Bill. Reminding young men of the necessity of systematically prosecuting their studies, he spoke encouragingly of the gentlemen who constituted the Board of Examiners. In conclusion, he was sure they would all most heartily join with him in wishing continued and increased success to the Pharmaceutical Society of Great Britain.

Mr. Radley, the Local Secretary, being called to reply, said,—The enthusiastic reception of the toast by that large company was a great gratification to himself, as also he was sure it would be to the executive of the Pharmaceutical Society in London. That Society had worked nearly thirty years, patiently, hopefully, perseveringly, and, he was happy to say, successfully. The London Society did not claim the exclusive credit of all that had been accomplished, yet it would be admitted by all that they had laid a firm foundation, on which a noble superstructure was being built; and not a little cause of congratulation was, that the Society for the most part was a self-educating and a self-governing corporation. As the evening was so far advanced, the speaker would only advert to one other topic, viz. the Benevolent Fund, which he was sure was well worthy the support of all; and he was sure they could not better manifest their appreciation of the labours of the Pharmaceutical Society than by supporting the Benevolent Fund.

A number of complimentary toasts were proposed, and the evening was spent in a convivial manner.

SUNDERLAND CHEMISTS' ASSOCIATION.

At a Meeting of the above Society, held in the Athenæum on Monday evening, February 7th, a lecture was delivered by A. S. DONKIN, M.D., lecturer on medical jurisprudence to the University of Durham, on "Poisons, and their Action on the Human Body."

The room was quite filled by members of the medical profession, and members and associates of the Society; the Mayor, W. THOMPSON, Esq., presiding.

The learned gentleman, with a precision and clearness that marked the practised lecturer and showed a complete mastery of the subject down to its minutest details, placed before his audience a complete summary of the chemical and physiological action of the various poisons.

After cordial votes of thanks had been passed to the lecturer and the chairman, notice was given that the chemistry class for students would commence on Wednesday, February 17th, and that the next lecture in connection with the Society will be given in the Athenæum on Monday, March 7th.

LONDON CHEMISTS' ASSOCIATION.

The First Meeting of the Session was held on Thursday, January 6th.

The President, Mr. R. J. JEWELL, on taking the chair, said he had a very pleasant duty to perform, that of presenting in the name of the Association a testimonial to Mr. J. T. Porter, for the services he had rendered the Society as its late Secretary.

The testimonial, which was a delicate Chemical Balance, was then given Mr. Porter.

Mr. PORTER, in thanking the members for such a handsome recognition of his services to the Association, when it was called the "Chemists' Assistants' Association," said that he had always felt a great interest in the Society, and ever should do so; he hoped to apply the Balance they had presented him with, not only to his own use, but to the furtherance of the objects of the Association.

Mr. FOSTER D. DOWNES then gave an excellent address.

The following are the arrangements for the Thursday Evening Meetings from December, 1869, to April, 1870, to which members may introduce friends:—January 6th, An Address by Mr. Foster D. Downes. January 20th, Mr. G. Brownen, "On the Proximate Analysis of Plants." January 27th, Mr. T. Trask, "On the Physical Properties of Gases and Vapours." February 3rd, Mr. R. J. Jewell, "On Carbolic Acid." February 10th, Mr. J. Sands, "On Gun Cotton." February 17th, Mr. W. Walker, "On Applied Electricity." February 24th, Mr. E. Beynon, "On Botanical Geography." March 3rd, Mr. J. T. Porter, "On Agricultural Chemistry." March 10th, Mr. G. Brownen, "On the Ultimate Analysis of Plants." March 17th, Mr. J. H. Jessop, "On Oleography." March 24th, Mr. S. W. Pickering, "On Chloroform." March 31st, Mr. E. Weaver, "On Medicinal Wines." The papers are followed by discussions. The proceedings commence at 9.30.

BIRMINGHAM CHEMISTS' ASSISTANTS' ASSOCIATION.

On Friday, January 7th, about thirty of the members of the above Association and their friends sat down to a supper at the Globe Hotel, Bull Street. Mr. C. J. ARBLASTER kindly consented to take the chair, and the President, Mr. W. J. CHURCHILL, the vice-chair.

After the cloth had been removed, the CHAIRMAN proposed the first toast of the evening, "The Queen and the Royal Family." He next proposed the "Birmingham Chemists' Assistants' Association, alluding to the benefits to be derived from such associations, and wishing it every success.

The PRESIDENT, in responding, thanked the Chairman for his kind wishes towards the Association, and said that the Association was in a very prosperous condition; and hoped that as their first supper had been such a success, it would become an annual event.

Mr. MUCKLOW, jun., then proposed "The Midland Counties Chemists' Association," and mentioned the generous manner in which they had provided a room for the Assistants' Association at the Temperance Hall, Temple Street, in which to hold their meetings, and hoped that the assistants would show their appreciation of the kindness by regular attendance.

Mr. **ARBLASTER** responded. After which he proposed "The President, Vice-President, Secretary, and Officers of the Birmingham Chemists' Assistants' Association," which was responded to by Messrs. Churchill, Turton, and Homer.

"The health of the Chairman" was next proposed by Mr. **HOWES**, and drunk with musical honours.

The **CHAIRMAN** having responded, Mr. **PATTISON** proposed "The Ladies," which was humorously responded to on their behalf by Mr. **BLISS**.

Mr. **SHARPLES** then proposed "The Host," which was responded to by Mr. **JOHNSON**.

The toasts were agreeably interspersed with songs and recitations, and the company dispersed well satisfied with a pleasant evening's enjoyment.

ORIGINAL AND EXTRACTED ARTICLES.

THE CONSTITUTION OF BODY.

BY AN ATOM.

In his paper on the constitution of matter, Mr. Tilden has incidentally raised some side-issues, which are scarcely less weighty than the main question itself; and the whole subject, both principal and incidents, being of such fundamental importance to the science of chemistry, no apology is necessary for reviewing the course which so far has been pursued, and for endeavouring to ascertain precisely at what point in the inquiry we have arrived. The subject is equally interesting to physicists and to chemists; and the greater the attention that is brought to bear upon it, the more likely are we to arrive at some definite conclusions, either positive or negative (if, indeed, *any* decided conclusions on the subject are possible); and negative conclusions, as showing how far and whither we can *not* go, will be fully as valuable as positive.

In order so to review our position, let us first gather from the paper referred to, the line of argument that is pursued; and then, glancing at each section, see whither that argument tends and where it lands us.

> *Argument.*—§ 1. Retrospect at the atomic theory, from Dalton to the present time. § 2. Certain objections and difficulties stated. § 3. Objections by Faraday quoted. § 4. Way of escape from the difficulty, by combining two theories. § 5. Such a view is more in harmony with the general plan of nature, and enables us to correlate our ideas of body and of physical forces. § 6. The physical forces and change are motion.

§ 1. Upon this section only one remark presents itself, viz. concerning causes. Students are apt to forget that causes, *quoad* causes, are, by the nature of the case, unknowable. It is not until we get behind *d*, and find another and higher cause *c*, which converts the given one *d*, into an effect, that *d* becomes the subject of knowledge; and this it becomes, not as cause, but in the character of dependent effect. In like manner, nothing can be known of *c*, except upon the hypothesis of *b*; nor of *b*, unless by the assumption of *a*; at which point all possibility of further knowledge ceases. The conclusion seems unavoidable, that matter (which occupies the position of *a*) must be regarded as the absolute negative cause of all things; and this, we may presume, is substantially what the writer means, when he speaks of the universe as the ultimate cause of itself.

§ 2. So far from the various cases cited being objections to the principle of the atomic theory, they rather appear to be only difficulties in its application; or, if they *are* exceptions to the general law, there is still nothing to show that they do not rank among that class of exceptions which proverbially prove the rule. For instance, let us take such a case as that of graphitic acid, where the combining weight of the carbon is given as 33, *i. e.* as $2\frac{3}{4} = \frac{11}{4}$ atoms of carbon. Now, what objection is there to assuming that there may be such formulæ, as *e. g.* $A_{2\frac{3}{4}}BC_{1\frac{1}{4}}$, or $D_{3\frac{1}{4}}E_{2\frac{1}{3}}F_{n}$, provided we understand that these figures represent only *proportions*, and that they should be reduced by means of a common denominator to integer numbers, as $A_{11}B_4$, C_5, and $D_{39}E_{23}F_{12n}$? or, possibly, it might be necessary to express them in a fractional form, as $\frac{1}{4}(A_{11}B_4C_5)$, $\frac{1}{12}(D_{39}E_{23}F_{12n})$. However this may be, there does not seem to be any reason inherent in the nature of an atomic theory, why there should not be double, triple, quadruple, octuple, duodecimal, etc., conformations of molecules; the designation, in each instance, being derived from the number required to reduce the fractions.

As we know nothing of the arrangement of atoms in a molecule, so we know of no reason why this, which might be called the fractional form of combination, should not be a regular law of the atomic theory,—a modification of the more general law of multiple proportions. With such a vast mass of evidence in favour of the theory, and against it only a few difficult cases, which the advent of more extensive knowledge may any day resolve in its favour, it would be most unwise to attempt to discredit or even to impugn so profoundly necessary a scheme.

Hitherto, we have been engaged upon the simplicities of the science; the time, however, seems approaching when its complexities are about to overtake us. But what should we think of the geometrician, who, having hitherto been accustomed to deal only with the easy lines of the first and second orders, should, upon meeting with curves of a higher degree, turn round and assume, because the equations to which he had been accustomed failed to fit these more difficult and more complicated problems, that, therefore, these were incapable of being equated? The parallel between the two cases is perfectly fair; lines of the first order being analogous to the simple symbols of chemistry; those of the second, to simple definite combinations; those of the third, to complicated combinations of groups; while such formulæ as $C_{116}H_{240}N_4PO_{22}$ (though this scarcely seems to rise beyond the third stage), and especially $C_{72}H_{113}NaN_{18}SO_{22}$, with its surd (but probably inexact number, 113, query 112?) may respond to curves of higher orders. But, because the higher equations are more complex, and mount into higher powers and more numerous terms, do we therefore regard them as less amenable to the regular laws of equations? There is no science, not even geometry, which can confine its dealings to regular problems. In truth, science would cease to be science, unless, sooner or later, it were able to make bye-laws for all cases, however seemingly irregular, which fall within its province. As our investigations extend, so as to include unstable, off-lying, or adventitious combinations within the sphere of research, we must expect to meet not only with unusual, but even with apparently anomalous formulæ. Such cases would constitute what might be termed the *casuistry* of the science; but none the less must they be amenable to, and be solved by its laws. It is not for them to cast a doubt upon the atomic theory, but for *it* to justify *them*.

If we desired to be furnished with a measure of the relative progress which the science of chemistry has achieved, none more distinct and unimpeachable could possibly be given, than is derivable from the *nature* of the objections so fairly stated to the atomic theory. From these it is evident that chemistry is still in its childhood, and that, as yet, we have struggled but a very short distance beyond the threshold of the science.

§ 3. The objection of Faraday almost emulates the subtleties of the old Greek dialectitians; but also, like them, upon being touched with the wand of criticism, it collapses like a soap-bubble, and leaves behind nothing but surprise that a man of such reputation should have put forward an answer so inconsequent. Throughout the whole extract, he treats of space as a real entity! space "permeates," "conducts," "insulates." Of course, we understand—or, at least, we suppose—that, by space, he really means the something (call it x), whatever it may be, which fills and distends space. Still, as we can only think by means of words, this loose form of expression is calculated to mislead the reasoner himself, as well as his audience. In this case, it appears so to have misled Dr. Faraday; who, overlooking this x, the recognition of which would have given quite another turn to his argument, appears to see only atoms, almost inert, and that mere *ens rationis*, empty space, which he proceeds to endow, not only with reality, but also with activity.

But why assume, as tacitly he has assumed, that homogeneous continuity is necessary. either for conduction or insulation, or any other manifestation of force? Would it not have been more reasonable and more consistent to assume that the several atoms exerted their powers—in the one case of attraction, in the other of repulsion,—each through a surrounding atmosphere, which atmospheres, collectively, comprise the whole of the interstices of the body? so that, although there is no continuity of atoms, there is yet a continuity of powers.

The illustration of the black sealing-wax, though plausible, is nothing less than a treacherous snare and a pitfall for the understanding. For the particles of carbon, which are paralleled with the atoms of body, are, virtually, extinguished by the mass of surrounding resinous substance, which thus becomes the only operative agency; whereas the corporeal atoms, though surrounded by an atmosphere of some kind, remain unimpeded in their activity. In the case of the wax, the active portion is the interstitial resin; in that of body, it is the central atoms themselves; so far, therefore, from being parallel, the two cases are exactly opposed, and the inference sought to be drawn falls to the ground. The logical vice of this attempted parallelism is, that things are compared which are wholly incapable of comparison; viz., dynamical relations in the atoms with merely mechanical relations in the wax. But this is not the first instance in which Dr. Faraday, though an able man of science, has been faulty in his logic.

Query? Upon the hypothesis of physical atoms which are not in contact, what is that substance (x) which separates them, and which fills up the intermediate spaces? and this, not merely within the pores of each single body, but moreover, throughout the vast interspaces that separate the globes (*atomi maximæ*) of our cosmos, and which thus permeates all nature, and interpenetrates and unifies all creation. When a measure of air is condensed into one-tenth of its former volume, what has become of the other nine volumes that were interfused with it? How did they escape from the gas-tight condenser? or, was a vacuum, equal to those nine volumes, produced in nature? Those nine volumes must have been *something;* and since they filled a determinate portion of space, must have been something *material.* What, then, is this unknown x? This, if determinable, is one of the most interesting and important problems that physicists have before them; and, until we arrive at some conclusions respecting it, we are not really in a position to discuss, to much purpose, the intimate constitution of body.

§ 4. The author remarks that a way of escape from such contradictions as those adduced by Dr. Faraday is offered us in the conjecture that matter (substance?) may be continuous, and of a homogeneous texture. I quite fail to perceive, however, in what way this supposition is to help us over the difficulty. I am afraid that, in attempting to reconcile the two theories, he has set himself an impossible task; since the difference between them is not a difference as between two discordant physical hypotheses, which yet may possibly be brought to accord, but between a physical theory of actual, finite, physical atoms, and a metaphysical theory of ideal, infinitely small metaphysical atoms. If we desire to deal with actualities, then, since no kind of infinity can be predicated of anything finite, we are precluded from assuming for body component parts, which shall be infinitely small. Moreover, physical atoms cannot possibly be conceived otherwise than as finites. On the other hand, when, for purposes of explanation or elucidation we turn to the theoretical aspect of the case, then we are driven to have recourse to a theory of infinites. In this point of view, the atom is the precise analogue of the geometrical point, and for that very reason is purely ideal. Both theories are necessary, though they are incapable of being fused and harmonized into one. It is the former, as I venture to think, that must always be the constitutive theory of chemistry, while the latter must be content to be put to regulative uses.

When dealing with absolute infinites, we cannot ascribe to them anything relative; neither weight, nor magnitude, nor any other physical property; not even though we concede, as we very well may, that infinite smallness is not absolutely nothing, but only a vanishing point.

§ 5. It is much to be wished that the nature of the case had permitted the author of this interesting paper to place before us his views as to the reconciliation of the two theories more distinctly and precisely. As it is, we are precluded from judging whether these views are, or are not, more in harmony with the general plan of nature than any other views. But, certainly, the *idea* of infinite divisibility (*i. e.* of infinites) can never be excluded from consideration, either by chemistry or by physics.

The term, "imponderable agents," is a most objectionable form of expression, inasmuch as it implies that, the forces so termed are still matter, though matter of a most ethereal kind; and as long as such a name continues to be used, the opinion will still survive, that the physical forces are material substances of exceeding tenuity.

Is it not setting up a man of straw, to raise a difficulty as to the action of infinites (*i. e.* of forces) upon finites? What is that motion, into which the paper we are examining resolves all the physical forces, but an action of infinites upon finites?

§ 6. The conclusions arrived at in this section are, "heat, light, electricity, magnetism, are, then, motion;" and again, "change, we may henceforth believe, is motion." Then, since any number of things which are severally equal to a given thing, are therefore equal to each other, heat, light, electricity and magnetism, together with change, are convertible terms, and mean, each and all of them, one and the same thing! Naturally, we all understand the writer's meaning to be that, these forces involve, or are accompanied by, or issue in, motion. But, to say that they *are* motion, that because a, b, c, d, and e are always associated with m, that therefore they *are* m, is a logical sin of the deepest dye. Such a pseudo-generalization, if acquiesced in, teaches nothing, leads to nothing, and shuts the door on further inquiry. The hollowness of such loose attempts to generalize is further evident, when we observe that, change is a *result* of motion; while heat, light, etc., are its *causes*. Nor, is the fact, that two forces are mutually convertible, any evidence of their identity, though it may afford a presumption of the identity of their origin. It is not that, *e. g.* electricity=magnetism, but, that electricity$+x$, or $-y$=magnetism; and it is precisely the values of these several x's and y's, which thus differentiate the two pairs of forces, light and heat, from electricity and magnetism, and again, the respective members of either pair from each other, that science just now most earnestly desires to discover.

The suggestion of Professor Graham that, the different so-called elementary substances may possess one and the same atomic molecule, existing (subsisting?) in different conditions of movement, (though it is more than doubtful whether "movement," which only records an effect, is the correct term to apply,) is almost identical with the doctrine which Democritus had even more distinctly enunciated, and is one that would necessarily present itself to most physicists who have thought much on the subject. In fact, it is inevitable, when we push our inquiries to their furthest extent, that we must be confronted by atoms which are theoretically uniform and homogeneous.

Have we then made any sensible progress in our knowledge—hypothetical or actual—of the intimate constitution of body? It is to be feared that we have not; but, though we have been unable to move a single step forward, still, some of the impediments to our progress have, perhaps, been cleared away, and we may be enabled before long to make a real step in advance.

LINIMENTUM POTASSII IODIDI CUM SAPONE.

BY NATHANIEL SMITH.

This liniment owes its place in the British Pharmacopœia to Dr. Rumsey, of Cheltenham, a member of the Medical Council; the formula was supplied to him from the 'Form-book' of the business with which I am connected.

The liniment has been in use in Cheltenham for more than twenty years, and during that period has been adopted by the medical profession in this locality, as a preparation in every way more desirable and efficacious than the Unguent. Potass. Iodid.

The formula was copied from a Pharmaceutical Journal of some twenty-five or thirty years ago with a German origin; it was then prescribed with a large quantity of spirit. As soap with spirit of wine in a solid form does not admit of being rubbed in so easily as soap with water, the water process was adopted.

The directions of the Pharmacopœia are not sufficiently clear; for instance, no soap made with vegetable oil could answer well; if pure curd soap, which is made with Russian tallow, were used in the proportion I propose naming, and the directions for mixing followed, I think all who now condemn the preparation would extend to it a verdict exactly the reverse. I recommend,

*White curd soap	2 oz.
Iodid. Potass.	1½ oz.
Glycerine	1 oz.
Distilled water	10 oz.
Essential oil of lemon	1 dr.

Reduce the soap into fine shreds, and melt in a water-bath with the whole of the water and the glycerine; when the soap is perfectly dissolved, pour it into a No. 9 Wedgwood mortar, in which the iodide of potassium has been previously reduced to fine powder; mix briskly, and continue the trituration until the mortar has become cool, and the liniment assumes the character of ice cream. Set aside for an hour, after which gently rub in the oil of lemons.

It will be noticed the quantity of soap in this form is larger than in that of the Pharmacopœia. At Dr. Rumsey's suggestion, and while the B.P. was in process of construction, the glycerine was added; it was subsequently found

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* For this use the white curd soap made by Messrs. Gibbs, of the City Soap Works, or Benbow's curd soap.

necessary to increase the soap, and hence the 12 drams were increased by 4 drams.

I purpose sending to Bloomsbury Square a specimen of the liniment made from the above directions.

Cheltenham, February 18th, 1870.

MEDICINAL DRAGÉES AND GRANULES.

BY ERNEST AGNEW.

The large extension given to this agreeable form of pill, and its adaptability to a host of substances usually administered in that manner, necessitate a few remarks on their manufacture, more especially as in England they seem to be less employed or less appreciated than in America or on the Continent, where it is usual to keep genuine *dragées* of various strengths, ranging from one grain to five of rhubarb, aloes, and various other simple and compound pills, sugar-coated; an advantage apparently much appreciated by customers, who rarely fail to renew a request for the same. The method adopted in their manufacture is one of admirable simplicity, but succeeds best on a large scale, unfortunately preventing its use for the general work of a dispensing counter. But the numerous special pills constituting the "patent" or leading article of nearly every pharmacist, can be made quicker, better, and more advantageously than by the ordinary method, even where aided by machinery. The ingredients for the pills should be thoroughly mixed and sifted, so as to form a fine, impalpable powder. With some substances of an untenacious character it is necessary to add a little dextrine, sugar, or gum. The sugar granules forming the nuclei of the pills are either to be bought from the wholesale confectioners under the name of *nonpareils,* or are easily made by agitating and rubbing together coarsely sifted sugar and syrup in a large copper basin over a slow charcoal fire.

The granules, weighing each about one-tenth of a grain, are measured out so as to furnish the requisite number of pills, and are introduced into a large copper basin suspended by two ropes from a bar of wood, capable of revolving horizontally on an iron bolt fixed in the ceiling. A small charcoal fire is lit in an open pan under the basin, and serves also to keep warm a quantity of syrup, with which the granules are moistened from time to time, and continually rubbed and agitated with a little of the powder, added very gradually, the basin being rapidly rotated, and jerked upwards occasionally. This operation, which must be repeated an indefinite number of times, until the *dragées* are completed, requires considerable skill on the part of the manipulator, for if too much of the excipient be added at once, it dissolves the previous *couche,* and prevents the regular formation of the concentric layers of which each *dragée* is built up, much in the same manner as starch granules are by some supposed to be formed. The final coating with sugar is the least difficult part of the operation, and is done either with syrup alone, or with the addition of a little plaster of Paris, very brisk agitation being required, so as to avoid any agglomeration of the *dragées,* the temperature being so regulated as to dry the sugar without a possibility of melting it. Or, in the case of certain pills, where sugar-coating is undesirable, owing to its discoloration by the ingredients of the kernel, such as in pills of iodide of iron, etc., copal and balsam of tolu dissolved in ether forms an excellent coating, easy of application, and effective in results.

The advantages of making large quantities of pills by this process may be briefly summed up: firstly, the rapidity with which they are made, a clever workman easily making a batch of 100,000 pills in a day and a half; secondly, their uniform roundness and pleasant appearance contrasted with that of ordinary pills; thirdly, their compactness and hermetic enclosure, which ensures their keeping without change, and at the same time allows of their easy solution in the stomach, envelope and excipient being both perfectly soluble.

Granules containing 1 milligramme of powerful medicines, such as arsenious acid, sodic arseniate, digitaline, aconitine, etc., are much prescribed by continental physicians, especially in Italy; and where a regular or gradually increasing dose of any such medicine is required, no system so completely fulfils the prescriber's intentions, combined with so little inconvenience to the patient. In making these granules, the active ingredient is usually dissolved in the syrup, the bulk being merely powdered sugar. Thus in making 10,000 granules of sodic arseniate, dissolve in 500 grammes of syrup 10 grammes of the arseniate, with which gradually moisten the granules, the operator rubbing and agitating them the whole time to prevent their adhesion.

Leptandrin, assafœtida, and many other nauseous substances, are commonly encased in sugar by our American *confrères*, who certainly display much ingenuity in the manner in which they cater for public patronage, some of their convenient inventions having become quite indispensable to the upper class of that country. At the works established at St. Denis by M. Menier, and now belonging to the Pharmacie Centrale of France, the *dragées* and granules are made by steam-machinery, and the rapidity of the operation is increased by a blast of warm air driven upon the basin, which revolves eccentrically, rendering it almost impossible for the granules to adhere to each other. Sugar-coated semen-contra is also much used as a pleasant remedy for worms in children, their resemblance to caraway comfits conducing much to their easy administration. But here we are trenching on the domains of the confectioner, from whom many a lesson is to be learnt in the art of rendering nice and attractive much which is in the crude state, to say the least, disgusting and repulsive.

Paris.

ON LIQUOR HYDRARGYRI PERCHLORIDI, B.P.

BY WILLIAM MARTINDALE.

DISPENSER, AND TEACHER OF PHARMACY TO THE UNIVERSITY COLLEGE HOSPITAL.

This preparation, which is a modification of the *liqueur de Van Swieten*, is again inserted in the Pharmacopœia. It was officinal in the London Pharmacopœia of 1851, but ejected from the first British Pharmacopœia. It was first introduced into the London Pharmacopœia of 1809, with the title of *Liquor Hydrargyri Oxymuriatis;* the formula given was the following:—

℞ Hydrargyri Oxymuriatis gr. viij.
Aquæ destillatæ fl. ℥xv.
Spiritus rectificati fl. ℥j.
Hydrargyri Oxymuriatem in aquâ liqua, eique adjice spiritum.

The same formula was given in the edition of 1824. In 1836 it was altered, hydrochlorate of ammonia being directed to be used to aid the formation and preservation of the solution. The London Pharmacopœia of 1851, and the present British Pharmacopœia have retained the same formula, which there is reason for believing was originated by Mr. Phillips, as in the preface to the second edition of his translation of the London Pharmacopœia, 1836, he takes credit to himself for it, as an improvement upon the older formula. He there states:—" A dilute solution of hydrochlorate of ammonia is now advantageously employed as a solvent for the mercurial salt, instead of a mixture of water and spirit of wine. A deposit was formed in the solution, apparently from the decomposition of the bichloride;" and a remark, appended to the formula, says:—"In the former Pharmacopœia the solvent power of water was increased by spirit of wine, instead of hydrochlorate of ammonia as now directed." Now the solution made according to his process does not contain a trace of perchloride of mercury as such. Mr. Phillips, in trying to obtain a stable solution, seems purposely to have overlooked the fact, that a solution of a double salt is formed, although the quantity of chloride of ammonium be much in excess of that necessary for its production. This salt is the ammonio-mercuric chloride, or *sal alembroth* of the alchemists, a definite compound, crystallizing in flattened rhombic prisms, and having the composition of,

$$2NH_4Cl.\ HgCl_2.\ H_2O.$$

There is a corresponding double salt formed with iodine, the iodo-hydrargyrate of ammonia of Boullay.

$$2NH_4I.\ HgI_2 3H_2O.$$

Two other salts of the perchloride of mercury and chloride of ammonium, are known, one having the composition of,

$$NH_4Cl.\ HgCl_2.$$

And the same with ½ at. of water,

$$2(NH_4Cl.\ HgCl_2)H_2O.$$

As we are directed in making the solution to use equal quantities by weight of chloride of ammonium and perchloride of mercury,—that is, about five equivalents of the former to one of the latter,—the following equation will probably show the result:—

$$5NH_4Cl+HgCl_2+H_2O=2NH_4Cl.\ HgCl_2.\ H_2O+3NH_4Cl.$$

There may possibly be a salt with more atoms of the ammonium salt, but such a salt is not at present known, and reasons can be assigned for its non-existence. Under any circumstance the solution will not contain perchloride of mercury as such, and this can be proved by experiment.

In the first place, the perchloride in the Pharmacopœia solution is rendered much more soluble. A solution of the double salt, containing, of the perchloride, equivalent to one part in two of water kept at a temperature of 100° F. showed no tendency to crystallize.

There is likewise a well-known powerful chemical affinity existing between perchloride of mercury and albumen. In the Pharmacopœia solution this affinity is lessened, and combination does not take place when it is mixed with a solution of albumen until some time has elapsed—until in fact the albumen has split up the double salt.

Again, and this is the most important, perchloride of mercury is soluble at ordinary temperatures in 16 parts and upwards, of common water, forming a clear solution, but if we attempt to make the Pharmacopœia solution with common water, a dense, and at first, flocculent, white precipitate is formed. If even the solution be made with distilled water, and then diluted further with common water, the same precipitate occurs.

This precipitate, collected by filtration, washed, carefully dried, and digested with liquor potassæ, changes to a yellow colour, forming mercuric oxide; ammonia is evolved, as a piece of moistened turmeric paper, laid over the mouth of the test-tube containing it, is turned brown, it can likewise be detected by its odour; and the fluid, filtered and acidulated with nitric acid, gives a white precipitate with nitrate of silver, proving the presence of chlorine. It is entirely volatilized by heat without being first fused, and part is sublimed on the upper side of the test-tube when held aslant. This white sublimate is calomel, as it is blackened on the addition of liquor potassæ, forming mercurous oxide; and the filtered fluid from this, acidulated with nitric acid, gives, with nitrate of silver, a white precipitate,—thus proving the sublimate to be mercurous chloride. These characteristic tests sufficiently show that the precipitate formed in the Pharmacopœia solution, made with common water, is the true hydrargyrum ammoniatum or white precipitate of the Pharmacopœia.

Its formation is due to the presence of lime in the water, which splits up the double salt, abstracts chlorine from it, forming chloride of calcium, which is retained in solution, and throws down the precipitate. Supposing the action to be due to carbonate of lime, which is always held in solution in common water, the decomposition would be represented by the following equation:—

$$2NH_4Cl . HgCl_2 H_2O + CaCO_3 = NH_2HgCl + NH_4Cl + CaCl_2 + CO_2 + 2H_2O.$$

The same reaction takes place in making a solution of the crystallized ammonio-mercuric chloride in either common water or lime-water, showing that the precipitate is not caused by the lime setting free ammonia from the excess of chloride of ammonium in the Pharmacopœia solution.

Seeing that there is no precipitate formed in the solution made with water free from lime, and that perchloride of mercury is perfectly soluble in water holding carbonate of lime in solution* (with lime-water it, of course, throws down mercuric oxide, as in making lotio hydrargyri flava), from the above experiments it may be deduced that (1) liquor hydrargyri perchloridi, B.P., does contain a double salt in solution; (2) this double salt is the ammonio-mercuric chloride, or sal alembroth; and (3) lime-water is a test for its presence, as it throws down a white precipitate with the double salt, and with the perchloride alone in solution it gives a yellow precipitate.

The precipitate obtained from one pint of the B.P. liquor, made with New River water, weighed 2·7 grains, bearing the ratio of 27 to 100 of the perchloride used in the first instance; thus upwards of one-fourth was converted into white precipitate, and if it were diluted, as it generally is when taken, with more water, which would yield a further supply of lime, eventually a point would arrive when the whole of the perchloride would be converted into the insoluble white precipitate! To corroborate this by experiment, I found that the filtrate from the above precipitate, diluted with more New River water, freely eliminated more of the precipitate.

The importance of the bearing of these facts on therapeutics cannot be overrated. Here we have one of the most active corrosive poisons rendered a comparatively inert and doubtful one, and its chemical and physical characters, and very probably its medicinal action, completely altered by the mere substitution of common water for distilled, as is too often done in dispensing. This is, in fact, inevitable in hospitals, and it is in these where this solution is principally prescribed, it being almost impossible to obtain a sufficient supply to dispense all their medicines with distilled water.†

The writer of this was led to make these investigations through a mistake.

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* "The carbonates of *barium, strontium,* and *calcium* precipitate mercuric oxide from the solutions of *mercuric sulphate and nitrate,* but not from *mercuric chloride.*" (Watts's 'Dictionary of Chemistry,' vol. iii. p. 900.)

† Yet such is done at the largest hospital in London. I allude to the lately much-abused St. Bartholomew's.

The solution having been made with common water on one occasion, he noticed the precipitate, and further examination led to the above-detailed results. The solution in the dispensary is now made without the chloride of ammonium, a little spirit of wine being employed to assist in dissolving the perchloride, although this, except in the way of economizing time, is quite unnecessary—it is, in reality, injurious, as it causes the deposit which Mr. Phillips mentions. This deposit will be again referred to.

The fact of a double salt being formed in the B. P. solution, although it will influence, may not eventually alter its medicinal action so much as at first sight it would appear, provided distilled water be always used, as, the perchloride having always a tendency to form double salts, one might suppose that this would occur when given by itself in solution in distilled water, and meeting with other soluble chlorides in the system, and this, very probably, before it was even swallowed, as the saliva always contains sufficient chloride of sodium for this purpose, when the perchloride is given in medicinal doses, —were it not that it has a still greater tendency to form an albuminate. This being the case, the experiment with albumen will tend to show that the rapidity of its action in the system will be materially lessened when administered as a double salt.

Taking all these points into consideration, they prove, conclusively, the inexpediency of using chloride of ammonium as a solvent for perchloride of mercury to be used as a medicine. The old formula was undoubtedly the better of the two. The slight deposit, which Mr. Phillips states is formed when the solution is kept for any length of time, is calomel. Its formation is due to the action of the spirit on the perchloride. When it has formed in any perceptible quantity, the solution should be rejected, and at no great sacrifice, as its intrinsic value is scarcely nominal when compared with its action as a medicine and a poison. But this decomposition of the perchloride may be entirely obviated, as a simple solution in distilled water is quite stable. For convenience in dispensing, such a solution, of the strength of one grain in two drachms, is kept prepared in most pharmacies, as the Pharmacopœia solution is too bulky, and dispensers think they are not justified in using it where perchloride of mercury alone is ordered, because it contains the chloride of ammonium as well. Foreseeing the consequences that might arise, I almost dread to make the suggestion, but why not recognize such a strength? It is generally made, in this respect, to be uniform with liquor arsenicalis, liquor morphiæ hydrochloratis, etc.*

In our dispensary such a solution is kept in a poison bottle among the other dispensing bottles, as it is so frequently used. It is labelled "Sol. Hydrarg. Perchlor. gr. j in fl ʒij, not B. P. Liquor," by way of distinction. Of course, it is not in a bottle of the same size as that containing the ordinary *liquor*.

The examination of this Pharmacopœia solution tends to show the truth of Sir Thomas Watson's remarks in his farewell address as President of the Clinical Society. He said, the administration of medicine should be simple; "they should be mixed as little as possible with other substances which might confuse and vitiate the conclusions to be drawn from their actual operation."

Chlorodyne.—If the responsibility is to rest with us pharmacists, shall we then permit the admission into the next Pharmacopœia of a formula for such an *olla podrida* as chlorodyne? Assuredly not; we should not be parties to such a retrograde movement. Chlorodyne—which has been proved to be a disguised preparation of morphia, as mithridate or Damocrates' confection was of opium—belongs to the same class of remedies whose "wild exuberance of composition the superstition of former ages brought into vogue,"* and whose efficacy, when the proper simple for a case in treatment is found to answer better, may be compared to that of "accumulating all the medicinal simples into one form" to "make a remedy against all diseases."*

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* 1 per cent., as I have before stated, would be preferable.

It is our duty to assist, not to obstruct, the therapeutist in his investigation of the action of medicines on disease. He has a wide field of labour, in which comparatively little is known—medical treatment at present being quite empirical; still such rapid strides have of late been made in this direction, that the day may not be far distant when the practice of medicine may stand on a definite scientific basis.

University College Hospital, Feb. 22nd, 1870.

JOTTINGS ON THE BRITISH PHARMACOPŒIA.

BY J. F. BROWN.

The following are strictly what the title describes them to be—jottings made during a course of reading for the Major Examination.

Some of them, I am aware, possess but slight importance, although the recent discussions at the evening meetings of the Society may render them opportune; and to all of them I would solicit the kind attention of fellow-students, that my corrections may be, if need be, themselves corrected. It may be convenient to note a few proposed emendations of the text,—

P. 36. After the dose of ammonii chloridum, insert "preparation in which chloride of ammonium is used—
Liquor Ammoniæ Fortior."

152. Third line from bottom, insert—
"Hydrargyrum Ammoniatum."

179. Seventh line from bottom, insert—
"Spiritus Ammoniæ Fœtidus."

The following are less palpable, and require explanation:—

P. 18. Thirteenth line from top, *for* "215·5" *read* "202·75" grains.

142 parts by weight of phosphoric anhydride, P_2O_5, will produce 811 parts of phosphate of lead, $Pb_3P_2O_8$; therefore 355 grains of the officinal acid, which contains 10 per cent. by weight of the anhydride, can only yield 202·75 grains of the lead salt.

P. 183. Twentieth line from top, *for* "9·92" *read* "9·905."

The quantity stated in the Pharmacopœia is apparently based on the assumption that exactly 3 grains of oxide of bismuth are contained in each fluid drachm of the solution, whereas the quantity, calculated from the weight of metal employed, is 2·994 grains, and therefore the weight of sulphide obtained from three fluid drachms can only be 9·905 grains.

My few remaining notes and queries I have arranged alphabetically.

Ferri Arsenias, $Fe_3As_2O_8$.—The note appended to this formula, "partially oxidized," hardly conveys to the mind an accurate idea of the average condition of this salt, since two-thirds of the iron may pass into the ferric state, without its ceasing to fulfil the conditions of the volumetric test. Twenty grains of $Fe_3As_2O_8$ contain 7·5 grains of iron; but the 170 grain-measures of the volumetric solution of bichromate of potash used to test that weight of the arseniate, are only capable of peroxidizing 2·856 grains of the metal.

Ferri Carbonas Saccharata.—The volumetric test given for this preparation erroneously indicates the presence of 57·4 per cent. of ferrous salt. The whole quantity which the salts employed are theoretically capable of yielding, would only form 45·5 per cent. of the mixture, and I need not say that in practice this is never reached. For the 330 grain-measures ordered to be used, 210 should be substituted.

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* 'The New Dispensatory,' London, 1770, p. 593.

Ferri et Quiniæ Citras.—This salt is precipitated blue by both the yellow and the red prussiates of potash, although the solution of persulphate of iron is employed in its preparation. Can any light be thrown upon this anomaly? for such I conceive it to be.

Ferri Oxidum Magneticum.—The remark made above on ferri arsenias applies to this also, which, if correctly represented by the formula Fe_3O_4, would contain 24·8 per cent. of FeO, whereas the result of the volumetric test shows the presence of only 8·9 per cent.

So also with Ferri Phosphas, $Fe_3P_2O_8$, since only 21 per cent. of metal in this salt, which contains 46·9 per cent., appears to remain in the ferrous state.

It may be worth while to note the strengths of a few officinal preparations, deduced from the atomic weights and other data given in the Pharmacopœia.

Liquor Ammoniæ Acetatis.—This contains 7 per cent. of $NH_4C_2H_3O_2$.

Liquor Ammoniæ Citratis contains nearly 15 per cent. of the salt.

Liquor Antimonii Chloridi.—One fluid drachm contains 29·5 grains of $SbCl_3$, or 36·7 per cent. by weight.

Liquor Ferri Perchloridi Fortior.—One fluid drachm contains 31·7 grains of Fe_2Cl_6.

Liquor Ferri Pernitratis.—One fluid drachm contains 7·8 grains of $Fe_2 6NO_3$.

Liquor Ferri Persulphatis.—One fluid drachm contains 28·6 grains of $Fe_2 3SO_4$.

Liquor Plumbi Subacetatis.—One fluid drachm contains 18·5 grains of $Pb_2O(C_2H_3O_2)_2$, or 26·8 per cent. by weight.

Liquor Zinci Chloridi.—One fluid drachm contains 45·7 grains of $ZnCl_2$.

Tinctura Ferri Acetatis. One fluid drachm contains 4·16 grains of $Fe_2 6C_2H_3O_2$.

Mistura Ferri Composita.—This contains almost exactly one grain (1·05) of $FeCO_3$ in each fluid ounce. The quantity of carbonate of potash used is just double that required to decompose the sulphate of iron.

Pilula Ferri Iodidi.—This is described as containing one grain of the iodide in three of the mass, but one in three and a half would, I think, be nearer the truth; the theoretical proportion being 1 in 3·68 grains.

Potassii Bromidum.—In preparing this salt, the bromine appears to be used in large excess. Two pints of solution of potash contain 1080 grains of KHO, which would theoretically unite with 1543 grains of bromine,—four fluid ounces or 5190 grains of the latter being ordered.

Potassii Iodidum.—The same remark applies, but less forcibly, to this salt; the quantity of iodine which combines with a gallon of solution of potash being 9797 grains and the quantity ordered 29 ounces, or 12,687 grains.

Sodæ Sulphas.—There is an error in the quantitative test given for this salt: 50 grains are said to yield 72·2 grains of sulphate of barium; whereas, a calculation based on the atomic weights shows that 100 grains are required to produce 72·3 grains of the latter,

Volumetric Solution of Oxalic Acid.—The B.P. states that 1000 grain-measures of this solution, containing 63 grains, are capable of neutralizing "one equivalent in grains of an alkali or alkaline carbonate," but if we proceed to test the truth of the latter part of this statement, it will be seen that of the first alkaline carbonate on the list, Ammoniæ Carbonas $N_4H_{16}C_3O_8$, 59 grains, or only one quarter of an equivalent in grains, are neutralized by the given quantity of the solution; and a little consideration will show that the normal carbonates, containing two atoms of alkali-metal in each molecule, must combine on equal terms—equivalent for equivalent—with a bivalent acid like the oxalic, whose formula, in the free state, exhibits two atoms of basic hydrogen. Therefore half an equivalent, or 63 grains of oxalic acid, will only neutralize half an equivalent of Potassæ Carbonas or Sodæ Carbonas, the weights of these, as shown by the table, being 83 and 143 grains respectively. The latter part of the sentence quoted above should consequently stand thus, "or alkaline bicarbonate," or preferably "acid carbonate of the alkaline bases."

Dover, February 19th, 1870.

[It may be as well at once to state with reference to this communication, that, although it contains some useful information, the author is in error with reference to the test for diluted phosphoric acid. The Pharmacopœia does not say that 355 grains of the acid yield 215·5 grains of phosphate of lead $Pb_3P_2O_8$, but that the fixed residue after being heated to dull redness will weigh 215·5 grains. This of course will consist of phosphate and oxide of lead. In the solution of bismuth, the quantity of oxide in f℥j, which is really 2·994 grains, has certainly been taken, in round numbers, as 3 grains. The reduction of some of the iron in citrate of iron and quinine to the state of ferrous salt is a well-known result in similar cases. We do not admit the justness of the remarks on arseniate, phosphate, and magnetic oxide of iron, on iodide of iron pill, and bromide and iodide of potassium. In the description of the volumetric solution of oxalic acid the terms used are right or wrong according to the notation or system referred to.—ED. PH. J.]

NOTES AND ABSTRACTS IN CHEMISTRY AND PHARMACY.

A New Sulphur Acid.

By the action of nascent hydrogen, developed either by the use of metallic zinc or by means of a voltaic battery upon sulphurous acid, M. Schutzenberger has succeeded in isolating a new acid, which possesses striking and peculiar properties. The most stable derivative he has examined is the sodium salt, which he prepares in the following manner:—A strong solution of bisulphite of soda is placed in contact with granulated zinc in a closed vessel, and the mixture kept cool. At the end of about half an hour the reaction is terminated, and a pretty abundant crystallization of the double sulphite of zinc and sodium is deposited. The liquid is then decanted, and mixed with three times its volume of strong spirit of wine. The clear alcoholic solution is, after a time, removed from the second crystalline deposit of double sulphite into a closed flask, which should be quite full, and left in a cool place for some hours.

In a longer or shorter time, according to the strength of the solution of bisulphite employed, the liquid becomes converted into a mass of fine colourless needles. These must now be collected on a cloth and pressed rapidly; the moist mass thus obtained becomes heated instantly in contact with the air; it is therefore necessary to remove it into a vacuum as quickly as possible. Once dry, the effloresced crystals are transformed into a white powder, which bears the action of oxygen without becoming heated. The remarkable compound thus obtained exhibits all the powerful deoxidizing powers of nascent hydrogen. The solution instantly decolorizes sulphate of indigo and litmus, precipitates hydride of copper from the sulphate of copper, and silver from nitrate of silver. The salt is very soluble in water, soluble in weak alcohol, but insoluble in strong alcohol. During the action of the zinc on the bisulphite in its preparation no hydrogen is evolved; and the crystals, after their oxidation by the air, leave a residue formed solely of bisulphite of soda, and the oxidation is not accompanied by the disengagement of sulphurous nor any other gas.

Heated in a tube, the dry substance yields a little water, some sulphur, sulphurous acid, and a residue formed of sulphate and sulphide of sodium. This disengagement of water during the calcination of the *dry* salt indicates the presence of hydrogen in this compound; and it is this hydrogen, feebly combined which gives to the body all the properties of nascent hydrogen.

The formula of this substance is $\left.\begin{matrix}SO\,H\\Na\end{matrix}\right\}O$, being that of the sodium salt of an acid $\left.\begin{matrix}SO\,H\\H\end{matrix}\right\}O$. This may be obtained by adding sulphuric or oxalic acid to the crystals of sodium salt; it gives an orange solution which is very little stable, and possesses the same decolorizing power.

In consideration of its properties and composition, the discoverer proposes to call it *hydrosulphurous acid.*

Bromide of Potassium.

The 'Journal de Pharmacie' contains a table, by M. Adrian, exhibiting the results of the examination of ten samples of bromide of potassium. From this we find that the most important impurity as regards quantity is the chloride of potassium, which is represented as appearing in proportions varying from 3½ to 15, and even in one instance to 30 per cent. of the salt. Iodide of potassium is, as might be anticipated, generally absent. Small quantities of carbonate and sulphate are constantly discoverable, and, what is more important, in some instances also bromate. This last salt it is especially important to avoid, since, in the presence of bromide, it is capable of giving free bromine by the action of the acids of the stomach.

The Volatile Portion of Balsam of Peru.

When the essential oil of balsam of Peru is submitted to fractional distillation in an atmosphere of carbonic acid, and under diminished pressure, it is separated into three distinct portions.

The first, occurring in small quantity, and boiling at about 200° C., is benzylic alcohol, C_7H_8O.

The second constitutes the greater part of the essence; it boils at above 300° C., and is composed of the benzoic ether of benzylic alcohol, benzoate of benzyl $= C_7H_7C_7H_5O_2$. Decomposed by alcoholic potash, it yields a benzoate and benzylic alcohol.

The third compound boils at nearly the same temperature as mercury. It appears to be another ether, the cinnamate of benzyl,

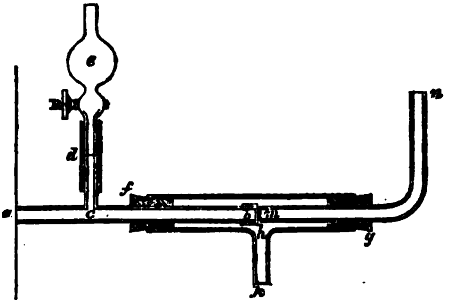
$$C_7H_7C_9H_7O_2,$$

since it yields by treatment with potash a cinnamate and the benzylic alcohol. —*Kraut,* '*Deutsche Chemische Gesellschaft.*'

Simultaneous Determination of the Carbon, Hydrogen, and Nitrogen, in the Analysis of Nitrogenous Bodies.

M. Schloesing contributes two papers to the 'Annales de Chimie et de Physique' for February, the above being the title of the first. In order to effect the proposed object, the author conducts the combustion in oxygen gas very much in the usual way, but behind the boat containing the substance to be analysed he inserts another containing a weighed quantity of pure carbonate of lead. To the combustion-tube he adapts tubes containing sulphuric acid and solution of potash, for the purpose of absorbing, according to the usual practice, the water and carbonic acid resulting from the combustion. In addition to these, at the extremity of the apparatus, are two absorption bottles, communicating with each other by an india-rubber tube, connecting the tubulures with which they are furnished at the bottom. The reagent they contain consists of copper in small cylinders of sheet metal with which the first is filled, and which is immersed in a strong solution of chloride of ammonium mixed with ammonia. The actual operation is performed by expelling the air from the entire apparatus by a stream of oxygen; then, by applying heat to the carbonate of lead, the combustion-tube becomes filled with carbonic acid, and the copper turnings in front of the boat containing the substance can be heated without undergoing oxidation. The nitrogen which is produced during the combustion is swept by a stream of oxygen into the bottle containing the copper; here the oxygen is absorbed from it, and the residual gas can be passed into a graduated tube and measured. Satisfactory analyses of several substances are recounted.

The second communication describes—



A Regulator of the Heat produced by means of Gas, for the use of Laboratories.—The apparatus will be readily intelligible from the accompanying drawing. The reservoir, which consists of a tube of any convenient form filled with mercury, is placed within the stove or other apparatus, the temperature of which is required to be constant. It is connected with *a*, the other extremity of which, *b*, is closed by a sheet of thin caoutchouc bound over its extremity. At *c* is a vertical arm, *cd*, to which is attached by a caoutchouc tube, a stop-cock, R, opening into a little bulb, *e*. A wide glass tube, *fg*, fixed upon *a b* by a cork, carries two tubes, the one, *h k*, sealed in at *h*, the other, *m n*, passing through a second cork. The extremity, *m*, ought to face the caoutchouc end, and be very near to it; *m n* is connected with the gas supply, and *h k* with the furnace or other apparatus of combustion.

To put the apparatus into operation, the stop-cock R is opened; the gas which comes by *n m* passes through the annular space existing between *m* and *b*, and away by *h k* to the burner. The mercury dilates, clears the stop-cock, and enters the bulb *e*. When a thermometer, introduced into the space to be heated, indicates a temperature close upon the desired degree, the stop-cock R is closed. The mercury can then dilate further only by inflating the caoutchouc end; this takes the form of a hemisphere, and advances towards *m n*; the size of the annular space is then diminished, and thus the regulation of the gas is effected by the dilatation of the mercury.

EXPLOSIVE CHARACTER OF OXIDE OF SILVER IN PILLS.

Dr. Quain has forwarded to us for publication the following remarkable case, communicated to him by Dr. Jackson, of Notting Hill, illustrating the great facility with which oxide of silver is reduced, and showing the necessity of caution in compounding pills containing that remedy:—

Dr. Jackson writes:—"May I tell you a curious fact with regard to the explosive nature of oxide of silver? The following prescription I gave to a lady last Monday,—

℞	Argenti Oxidi	gr.xlviij	
	Morph. Muriat.	gr.j	
	Ext. Gentian.	*q. s.*	M.

Make twenty-four small pills, and silver them, etc.

"These pills were put into an ordinary pill-box. The lady, being in her nursery, and having no pocket in her dress, placed the box in her bosom (I suspect next the skin). In three-quarters of an hour a severe explosion took place; her under-clothes over the part were reduced to *tinder*, and her right breast severely scorched, and smoke issued freely from beneath her dress. She seized the parts with both hands, and thus put out the fire; but since then I have had to dress a rather severe burn on the bosom."

BLOOMSBURY COUNTY COURT.

February 9*th*, 1870.

(Before G. L. RUSSELL, Esq., Judge.)

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN *v.* M'CALL.

The action was brought to recover £5 upon particulars as follows:—"To amount of penalty incurred by the defendant in selling or keeping open shop for retailing, dispensing, or compounding poisons or a poison, and in taking, using, or exhibiting the name or title of chemist, contrary to the provisions of the 'Pharmacy Act, 1868' (31 & 32 Vict. cap. 121)."

Mr. Flux (*Flux*, *Argles*, and *Rawlins*), for the plaintiffs, read the preamble, and clauses 1, 2, 5, 13, and 15 of the 'Pharmacy Act, 1868,' and section 12 of the 15 & 16 Vict. cap. 56.

The Defendant in person said: I admit that I have sold poison, and called myself chemist during the last six months.

The Judge, to the defendant.—I will take a note of that admission. Do you admit also that this action is brought by the authority of the Council of the Pharmaceutical Society of Great Britain.

The Defendant.—Yes.

Mr. Flux.—Then it appears unnecessary for me to call any witness, because the defendant has admitted all facts requisite to entitle me to a judgment against him if he be not a registered chemist and druggist, and as to that I have to ask your honour to take judicial notice that the defendant's name does not appear in the published register of chemists and druggists as such register is in the possession of the Court, it having been supplied to the Court by the medical department of the Privy Council, and section 13 making that register evidence.

The Judge.—So it appears to me.

The Defendant.—There has been a case in the north of England which I have read of, where the Judge expressed a doubt as to whether the Pharmaceutical Society of Great Britain could recover a penalty under the Act of Parliament.

Mr. Flux.—That is so, your honour. I did not mention the fact, because of entertaining the wish that your honour should consider the legal bearings of the case unbiassed by anything precedent. I am glad of the opportunity now to supply the Court with the fullest information. The case in the north of England is reported in the first number for this year of the 'Law Times,' and there the Judge adjourned the case for the purpose of my obtaining an opinion upon the Act of Parliament from her Majesty's Attorney-General. I have obtained that opinion, and I have it in Court at your honour's service.

The Judge (to the defendant).—Do you wish to have that opinion read?

The Defendant.—Yes.

Mr. Flux.—I will read the opinion. It is a joint opinion of her Majesty's Attorney-General and Mr. E. Bullock, of the Norfolk circuit. It is as follows:—

"We are of opinion that an action to recover a penalty or sum of £5 may be brought against any person who is within the description given in section 1 of the 'Pharmacy Act, 1868,' viz., 'Any person who shall sell or keep open shop for retailing, dispensing, or compounding poisons, or who shall assume or use the title chemist and druggist, or chemist or druggist, or pharmacist, or dispensing chemist or druggist, in any part of Great Britain, unless such person be registered under that Act, and that such action, if brought in England or Wales, must be brought in the County Court or in any Court for the more easy recovery of small debts and demands where the proceedings are by plaint, but not in any Superior Court.

"2ndly. The action must be brought under section 15 of the 'Pharmacy Act, 1868,' and in the manner provided by section 12 of the 15 & 16 Vict. cap. 56. No authority or fiat of the Attorney-General, or other public officer, is necessary in respect of such action.

"3rdly. The production of a printed copy of the register for the year in which any offence under the Act is alleged to have been committed will be sufficient evidence of the fact that a person whose name does not appear on such register was not, at the time of the commission of the alleged offence, registered under the Act.

"R. P. COLLIER.
"E. BULLOCK.

"5, *Pump Court, Temple. January 4th*, 1870."

The Judge.—I should like to consider the case, and will reserve my judgment.

Mr. Flux.—The adjourned hearing of the north of England case stands for Friday, and it is very desirable that your honour's judgment should be known, in order that, whichever way it may be, it may be quoted to the Judge at Oldham.

The Judge.—I will endeavour to give judgment to-morrow.

Thursday, February 10th, 1870.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN v. M'CALL.

Judgment given for the plaintiffs, with costs, including attorney's fee.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN v. MARWOOD.

This case came on again before J. S. Temple, Esq., Q.C., at the Oldham County Court, on the 11th of February, 1870, upon adjournment from the December Court.

Mr. Flux again appeared for plaintiffs, and Mr. C. E. Blackburne, for the defendant.

The Judge.—I have considered this case, and am of opinion that the plaintiffs cannot succeed in this Court.

Mr. Flux.—If your honour will favour me for a few minutes, I trust to be able to show that the plaintiffs were right in bringing this case before this Court. It may be in your honour's memory, that when the case was before the Court in December, your honour put it upon me to obtain an opinion of her Majesty's Attorney-General, and that subsequently to December such an opinion was placed by me in your honour's hands.

The Judge.—Have you seen him?

Mr. Flux.—I have, and laid a case before him, and I have got his opinion; it was necessary for me also to have a junior counsel, and at an expense to my clients exceeding £20, I am in a position to produce a joint opinion. Before reading it, however, I may mention that on the last occasion, you inquired of me for a precedent for this action, I then mentioned that it was the first case that had come on for trial; but it has happened that another case precisely similar in character has been heard before the County Court Judge for the Bloomsbury District in London, Mr. George Lake Russell. That learned judge heard the case, and, so far as I am able to form an opinion, it presented all the features which the present case does. After hearing it, that learned judge was of opinion in my favour, when the defendant in it mentioned the doubts entertained by your honour, and I then placed in the judge's hands a copy of the opinion, which I will presently read to your honour. The judge then reserved judgment, and on a subsequent day he gave a verdict for the plaintiff, with costs. It so happened, as I am informed, that in County Court practice there is no record of judgment handed to a solicitor, therefore I am only in a position to inform your honour that the case resulted in a verdict for the plaintiffs, mentioning, at the same time, that I presume the learned judge's notes would be open to your honour in case you desired it. When the judge at the Bloomsbury County Court said that he would like to adjourn the case for his decision, I mentioned to him that this case was appointed for to-day, and that I thought it would be satisfactory to your honour if I could mention, on this occasion, the conclusion arrived at by him; he promised to accommodate me if possible, and, as a consequence, he yesterday delivered the judgment, which, as I said before, was in favour of the plaintiff. I will now read the opinion which has been obtained from the Attorney-General, and Mr. Bullock, of the Norfolk Circuit; it is as follows. (See p. 553.)

The Judge.—Who is R. P. Collier? You said you would bring me the opinion of the Attorney-General.

Mr. Flux.—R. P. Collier is her Majesty's Attorney-General.

The Judge.—Not the Attorney-General; is he not the Solicitor-General? I want the Attorney-General's opinion.

Mr. Flux.—Sir R. P. Collier has, for some time, been her Majesty's Attorney-General.

The Judge.—This is an Act of Parliament which gives to the Pharmaceutical Society the privilege of suing for certain penalties, but is there any view given, or has the Attorney-General pointed out any direction in the Act of Parliament to alter the character of this case? It appears to me, that this is made a misdemeanour; the man who sells improperly against the Act of Parliament and is made liable to penalty, is by Act of Parliament declared guilty, in my opinion, of misdemeanour. I want to know, has the Attorney-General been asked, or has he handed over any reason upon which he founds his opinion that this may be brought by action.

Mr. Flux.—The whole matter was laid before the Attorney-General, in a case prepared by me, so as fairly to raise the points as completely as possible, and he devoted a very lengthy consultation to the full consideration of it. The result of that consultation was the opinion which I have read, and which I venture to submit, goes to the whole matter. As respects the question, as to the jurisdiction of the County Court, you may remember that it was considered when last I was here, and that you offered to the other side the opportunity of going to the Court of Queen's Bench, upon the question, whether the County Court had jurisdiction, and that the other side then said that they did not wish for that opportunity.

Mr. Blackburne.—We did not say that we did not wish, we said that we had not the means to go.

Mr. Flux.—Either the one way or the other.

The Judge.—There is no doubt there is a great value attached to this Act of Parliament, because the penalty rests upon a matter that affects the public interests.

Mr. Flux.—Your honour will see that this penalty is the only protection interposed by Parliament for the safety of the public in the matter of the sale of poisons, by persons not possessing the proper qualifications. The preamble of the Act shows the evil which the Act was intended to remedy, and if I cannot recover the penalty upon the facts which it will be my duty to lay before you, the defendant will go forth from this Court to the world, bearing the sanction of the Act of Parliament to sell or vend poisons to any extent.

The Judge.—I deny that; Parliament having made a certain thing a misdemeanour it is a matter of criminal law, and not of a civil action, and therefore I want to know whether that has been brought to the notice of the Attorney-General.

Mr. Flux.—The word "misdemeanour" does not appear in the Act of Parliament, in relation to the offence which is the basis of this action.

The Judge.—Perhaps; but I say that the man who sells contrary to the Act of Parliament, and is liable to a penalty in consequence, is, in my opinion, guilty of a misdemeanour.

Mr. Flux.—I once laid a case before the present Lord Chief Baron, when he was Attorney-General, and Mr. Mellish, two of the most eminent lawyers of the day, and they advised me that offences under the Pharmacy Act, which are on the same footing as offences under this Act, were not misdemeanours. I should be in a position to produce that opinion to your honour if I were in London, and had access to my papers, though I will pledge myself to produce that case, and the opinion bearing the signature of Sir Fitzroy Kelly and Mr. Mellish.

The Judge.—I do not doubt your word at all, but I confess I cannot convince myself that where an Act of Parliament declares that a man shall be liable to a penalty of £5, and says nothing of how it shall be recovered, it can become a matter recoverable in an action, except at the suit of the Attorney-General.

Mr. Flux.—It is possible that your honour has overlooked these words in section 15, in relation to penalties, "The same may be sued for, recovered, and dealt with in the manner provided by the Pharmacy Act, for the recovery of penalties under that Act." The attention of the Attorney-General having been brought to this, he has written this opinion, "The action must be brought under section 15 of the 'Pharmacy Act, 1868,' and in the manner provided by section 12 of the 15 & 16 Victoria, cap. 56. No authority or fiat of the Attorney-General is necessary in reference to such action."

The Judge (to Mr. Blackburne).—What does the defendant mean to do? Does he mean to submit to the penalty?

Mr. Blackburne.—The defence is, that my client has complied with the Act of Parliament.

The Judge.—That is a matter of fact, and quite apart from the question of jurisdiction.

Mr. Flux.—If we go from the question of jurisdiction, and come to the question of fact, I am prepared to deal with it on evidence.

The Judge.—If I give a judgment for the plaintiff, on the present occasion, I shall do it out of respect to the Attorney-General's opinion, and recommend the defendant to appeal.

Mr. Blackburne.—If there is a conviction, it will be for my client to say whether he will take your honour's advice, and appeal.

The Judge.—I have no factious feeling about the matter, but I thought it was not a case for civil jurisdiction, and any judgment I give out of deference to any higher authority than my own I shall give subject to the consideration of the Court of Appeal, if the defendant chooses to appeal.

Mr. Flux.—The defendant shall have every facility. I am sure your honour will give me credit for having respect to your wishes, looking at the very large expense incurred to procure the opinion of her Majesty's Attorney-General.

The Judge.—I remain of the same opinion, that the case was not one for civil but for criminal jurisdiction, and that nobody could sue for it but the Crown.

Mr. Flux.—On the last occasion the defendant admitted that he used the name "chemist," but your honour felt a delicacy about receiving his admission, so I will call a witness to prove the fact in deference to your honour's wishes.

The Judge.—There was an admission of the defendant's attorney that his name was not on the register; that, I consider, was an admission.

Mr. William Peirce was then called, and produced an order for the insertion of the defendant's advertisement in the newspapers. The defendant signed the order in the witness's presence.

Mr. Flux.—If your honour will read the whole of the advertisement, you will see that the defendant is one of a class of men who call themselves herbalists, and profess to give medical advice, which is not the business of a chemist. That advertisement, I submit, brought him within the 15th clause of the Act of Parliament as a person who, not being on the register of chemists and druggists, acted as one.

The Witness, cross-examined by Mr. Blackburne, said, that when he got the order for the advertisement, a paper, now produced, was shown to him. It was on the faith of that certificate that the advertisement was inserted. He asked the defendant if he was registered, and the defendant showed him that ticket as a proof.

The Judge.—Where did it come from?

Mr. Blackburne.—From the Pharmaceutical Society.

Mr. Flux.—I will put the registrar of the Pharmaceutical Society in the box.

Mr. Blackburne.—The Act of Parliament says, all persons who are chemists and druggists within the meaning of the Act shall be registered upon certificates according to schedules C. and D. of the Act, and that a chemist and druggist was a person who had kept open shop for the making up of the prescriptions of duly qualified medical practitioners. I shall prove that the defendant sent certificates in conformity with the law to the Pharmaceutical Society, and that, owing to some underhand means or another, the Society did not put him on the register,—my client does not know why,—and now, forsooth, they come down upon him for his authority for using the title chemist and druggist.

The Judge.—That settles it. He is not on the register?

Mr. Blackburne.—No. The certificate shows that he had complied with the Act, and so was entitled to be on the register, and the moment he got the receipt he produced it to the agent of the paper as an authority for him to insert the advertisement.

Mr. Elias Bremridge, examined, said:—I am the registrar appointed under the Pharmacy Act, 1868. My office is at 17, Bloomsbury Square, London. This plaint was brought by me under the authority of the Council of the Society. In January of last year I received from the defendant certain papers, and on the receipt of those papers there was sent to him, as a matter of course, a receipt for them. That document first produced was the receipt so sent. I received about 10,000 sets of certificates at that time. I subsequently considered them, and exercised the functions of registrar as required by the Act of Parliament. The result, so far as the defendant was concerned, was, that I was not satisfied that he was a proper person to be placed on the register. I informed him of that, and did not place his name on the register. In the interval between that day and the commencement of these proceedings I have had many communications with the defendant.

Cross-examined by Mr. Blackburne.—I received from Mr. Marwood certificates under schedules C. and D. I think it was dated in December. I was not bound to put every applicant on the register. I refer you to clause 12 of the Act.

Mr. Flux.—The clause says, that no name shall be entered in the register authorized by the Act unless the registrar is satisfied, by proper evidence, that the person claiming is entitled to be registered. There is an appeal from the registrar provided by the clause, and the defendant did not appeal. Any appeal from the decision of the registrar would have been decided by the Council of the Pharmaceutical Society.

Mr. Blackburne (to the witness).—Do you require any other information than that set forth in the Act?

Witness.—I should exercise the discretion given to me by the Act.

Mr. Blackburne.—Say yes or no.

Witness.—I was bound to exercise my own discretion when these matters were put before me. I have registered women.

Mr. Blackburne.—Did you get any other information than that required by the Act to register these women?

Witness.—When an application is made to me, I exercise my discretion. If I happen to know, of my own knowledge, that the person was not qualified, I should not register him. I should inform him so, and then his case would be as this man's was. He might appeal to the Council. I told him that in my letter.

Mr. Blackburne.—Did you write to Mr. Hargreaves, the local secretary?

Mr. Flux.—I submit that if a person in the position of Mr. Bremridge, in exercising his judgment cast upon him by the Act of Parliament, applied to any gentleman whatever for information and obtained it, the Court would not compel him to disclose his sources of information.

Mr. Blackburne.—Did you ever require from anybody else further information than that required by the Act to enable him to be put on the register?

Witness.—I exercised my discretion.

Mr. Blackburne.—Will you give me an answer—yes or no? It is a simple question. Have you ever required any further information than these certificates mentioned in the Act?

Witness.—I should require further evidence if there was anything on the face of the document which indicated that a person was not properly qualified. I required it in a vast number of instances.

Mr. Blackburne.—What have you required?

Witness.—I am not bound to answer what I require. I want to know that the person applying is a proper person. I was not satisfied that the defendant was a fit and proper person to be put on the register.

Mr. Blackburne.—Marwood sent you some papers before this application, and you returned them as being informal?

Witness.—Yes; and that was one reason why I investigated this case, because I was not satisfied he was a chemist and druggist within the meaning of the Act.

Examined by Mr. Flux.—The certificate was signed by a magistrate of this borough. I communicated with him.

Mr. Blackburne said this had not arisen out of his cross-examination.

The Judge.—I have nothing to do with the magistrate.

Mr. Flux.—The witness has been examined as to whether he made *bonâ-fide* inquiries in order to exercise a *bonâ-fide* judgment. (To witness.) Did you make *bonâ-fide* inquiries respecting the gentleman who signed the certificate?

Witness.—I did; and the result was, that I was not satisfied that he was a fit and proper person. Defendant was not, by hundreds, the only person who sent certificates *primâ facie* in form, and whom I refused to put on the register. I am under a penalty if I wilfully place a person on the register without being satisfied of his fitness.

This was the case for the plaintiff.

Mr. Blackburne.—My answer is a very simple one. I refer your honour to the 5th clause of the 31 & 32 Vict., which requires any one wishing to act as a pharmaceutical chemist or chemist and druggist, within the meaning of the Act, to be registered. Claims to be registered must be sent by notice in writing to the registrar by the applicant, with certificates according to Schedules (C) and (D). I then refer to clause 3, which defines the business of a chemist and druggist. The Secretary of this Society admitted that the Act of Parliament had in every way been complied with. He did not impeach in any way the certificates, and I submit, and prove, that the defendant had for many years kept open shop, and could produce prescriptions of medical men he had dispensed. He has done everything the law required, and if he is not on the register, it is from no fault of his own.

The Judge.—One of the things the law requires is, that he should be on the register; and he must prove himself to be on the register to obtain its protection.

Mr. Blackburne.—We had not the power to put the defendant's name on the register. The Act said we should do certain things. We have done everything required, and if the Pharmaceutical Society has not put the defendant's name on the list, surely they cannot come here to sue for a penalty for what was their own fault; and was he not justified in using the title when he had not only complied with the Act of Parliament, but got a certificate from the Pharmaceutical Society, and the agent told him that all that could be done was done, and he was a fit and proper person to be placed on the register?

The Judge.—His name is not on the register, and if it is not on, the Act of Parliament is not complied with.

Mr. Blackburne.—I admit the defendant is not on the list; but how could he possibly get on?

The Judge.—That is nothing to me.

Mr. Blackburne.—I submit that it is a hardship on my client.

The Judge.—Supposing he tried to get on and could not do it, that was a case for appeal.

Mr. Blackburne.—The expense of appeal, should there be one, would be a hardship on my client; though not so much so on my friend who represent a large body.

The Judge.—I have nothing to do with the Act of Parliament, whether defendant had complied with it or not.

Mr. Blackburne.—My client has done all he could.

The Judge.—That might be. It only shows the absurdity of the Act. The only question for me is, was he authorized by being on the register? The Act of Parliament said the penalty was due if they could not show they were on the register. That was the fact. I do not pity the defendant at all, because he is obstinate, and would not conform to the regulations which all the medical profession said were for the benefit of the public, and which Parliament sanctioned.

Mr. Blackburne.—My client has done that in every particular.

The Judge.—I cannot help it.

Mr. Blackburne.—The Act of Parliament said that chemists and druggists must do certain things, and my client has done those, and he could do no more.

The Judge.—A man who was refused to have his name registered, could appeal. Suppose he was refused, I have no power to alter it. There is no power given to this Court with regard to the proceedings of the registrar.

Mr. Blackburne.—It is a question for his honour to decide on the facts, whether defendant has not done all in his power.

The Judge.—It is a very hard and absurd case in my opinion.

Mr. Flux.—There is no desire to press the defendant unduly for the penalty, so long as he abstains from further violation of the law. I wrote him to that effect on November 7th, but he would not agree to it.

The Judge.—He had a right to refuse and carry the matter to law. He had applied, he said, to be put on the register, and done all he could. If the Act of Parliament would not permit him to get on, I could not help it.

Mr. Blackburne.—He got a certificate from the Secretary that he had complied with the Act. If your honour thought I ought to support his statement, that the defendant was a chemist and druggist within the meaning of the Act, I have witnesses prepared to do it.

Mr. Flux.—Assuming your honour's judgment to be a verdict for the plaintiff, I am authorized by those I represent not to ask for costs, though they consider that the defendant has vexatiously put them to considerable trouble.

The Judge.—They might depend on it I will give no costs if I can avoid it. I give judgment against the defendant, declaring him liable to the penalty of £5.

BERRY *v.* HENDERSON.

IN THE QUEEN'S BENCH, BEFORE MR. JUSTICE LUSH AND MR. JUSTICE HANNEN.

Mr. Quain, Q.C.—My lord, there are two cases and two convictions in this case, which run into each other to some extent, and they are subject to this question, whether there should be two convictions at all of this kind; whether, in fact, there can be two penalties arising out of one transaction.

Mr. Justice Lush.—Are we to take both cases together?

Mr. Lumley Smith.—I think that will be the more convenient course.

Mr. Quain.—I will take No. 1 first, if your lordships will allow me. The following facts were proved or admitted:—On the 11th day of August, 1869, one Ansell Johnson, being a person unknown to the appellant, and not introduced to the appellant by any person known to him, came into the shop of the appellant, the appellant and his assistant being there, and asked to have made up a prescription which was written in pencil, and is as follows. Then comes the prescription, which I need not trouble your lordships with, except to say that it is written in the ordinary abbreviated or dog Latin in which prescriptions are usually written, and it appears to be a prescription for a lotion composed of hydrocyanic acid and rose-water, signed "R. M. L.," and the words "Mrs. Newton" as the person for whom it was intended, "August 11th, 1869." The original of this prescription is to be taken to form part of this case. The meaning of the name of Mrs. Newton in the prescription was that the prescription was for the use of Mrs. Newton. There is a legally-qualified medical practitioner having the initials "R. M. L." The appellant's assistant dispensed the prescription by putting two drachms of hydrocyanic acid into a two-ounce bottle, and filling up the bottle with rose-water, according to the meaning of the prescription. The appellant made the following entry in his prescription-book. He enters the name of Mrs. Newton, and copies the prescription in the usual ordinary way; and he also indexed the entry by inserting the name "Newton" and the page in the index contained in the book. The prescription book is a book in which the appellant enters all prescriptions he makes up. This book is to be taken to form part of this case. Ansell Johnson paid the appellant's claim, and took the bottle and its contents away. The bottle was labelled as follows:—"Caution. For external use; the lotion to be used three times a day. Mrs. Newton. H. Berry, Dispensing Chemist, Member of the Pharmaceutical Society, 58, Montague Street, Worthing." The Pharmacy Act, 1869, received the royal assent on the day of the alleged offence. The following points were raised on behalf of the appellant:—That the appellant had not sold prussic acid pure and simple, but a mixture or compound of prussic acid with rose-water; that that mixture was a medicine, and the prussic acid sold formed an ingredient of that medicine, and was therefore within the exception contained in the 17th section of the Pharmacy Act, 1868; that the name "Mrs. Newton" indicated the name of the person to whom the medicine was sold or delivered. The following points were raised on behalf of the respondent:—That the thing sold was not a medicine, but a poison partially diluted; that the name, "Mrs. Newton," entered by the appellant was not the name of the person to whom the article was sold or delivered, but only the name of a person for whose use it was alleged to be required; that the book in which the entry was made was not a book kept for that purpose, inasmuch as it was kept for the purpose of copying therein prescriptions of all sorts. The magistrates adjourned for the further consideration of the matter, until the 25th August, 1869. On the last-mentioned day they convicted the appellant of the offence, and adjudged him to forfeit and pay the sum of 10*s.*, to be paid and applied according to law, and also to pay to the respondent the sum of £1. 1*s.* for his costs. The appellant, being dissatisfied with the decision, duly applied to have this case stated, and entered into a recognizance, as required by the first-mentioned Act. The questions of law are, whether a mixture of prussic acid and rose-water is a poison within the meaning of section 17 of the Pharmacy Act, 1868, and of Schedule A, part 1, thereto; whether a mixture of prussic acid and rose-water is a medicine within the meaning of section 17; whether, according to the facts, the appellant complied with the requirements of the proviso at the end of the 17th section of the Pharmacy Act, 1868; whether, according to the facts, the defendant had committed the offence with which he was charged. Your lordships see that is a conviction upon this case: "An information was preferred under section 17 of the Pharmacy Act, 1868, against Henry Berry, a Pharmaceutical Chemist, duly registered under the Pharmacy Act, 1868, charging that Henry Berry did unlawfully sell a certain poison of those which are in the first part of the Schedule (A) to the Pharmacy Act, 1868, to wit prussic acid, to a certain person unknown to the seller, and not introduced by some person known to the seller." The second conviction is for the very same act of sending out this identical same thing not labelled "Poison," whereas the Act says it must be labelled "Poison."

Mr. Justice Lush.—The same act?

Mr. Quain.—For the identical same act.

Mr. Justice Lush.—For not putting a label on the bottle?

Mr. Quain.—For not putting the word "poison" on the bottle. It is a conviction under the Pharmacy Act, 1868, 15 & 16 Vict. c. 121, s. 17. It will be for your lordships presently to decide whether this having taken place the very day when the new Act received the royal assent, they have not convicted him entirely under the wrong Act of Parliament; and whether, the new Act having come into operation on the 11th of August,—the very day this offence was committed,—they ought not to have proceeded under this Act.

Mr. Justice Lush.—It had both received the royal assent and come into operation on that day?

Mr. Quain.—On that very day; and it will be for your lordships to decide the question. I say that that Act of Parliament was in operation the whole of that day. I do not know, I am sure, when it received the royal assent, nor is there any evidence of that.

Mr. Justice Lush.—What is the other Act, Mr. Quain?

Mr. Quain.—I think, my lord, it would be quite possible to decide this case without going into this very thorny point, as to when the Act of Parliament came into operation; but the Act is the 32 & 33 Vict. c. 117, s. 3, which received the royal assent, and, therefore, came into operation on the 11th of August. There is nothing in that Act which makes it come into operation at any other time, and, therefore, it came into operation on the 11th August, 1869, the very day when this transaction took place. First, my lord, without troubling your lordship on that point, I venture to think it is sufficiently clear on the 17th section of the Act of 1868. The Act provides in these words, "It shall be unlawful to sell any poison, either by wholesale or by retail, unless the box, bottle, vessel, wrapper, or cover in which such poison is contained, be distinctly labelled with the name of the article and the word 'poison,' and with the name and address of the seller of the poison; and it shall be unlawful to sell any poison of those which are in the first part of Schedule (A) to this Act, or may hereafter be added thereto under section 2 of this Act, to any person unknown to the seller, unless introduced by some person known to the seller; and on every sale of any such article, the seller shall, before delivery, make or cause to be made an entry in a book to be kept for that purpose, stating, in the form set forth in Schedule (F) to this Act, the date of the sale, the name and address of the purchaser, the name and quantity of the article sold, and the purpose for which it is stated by the purchaser to be required, to which entry the signature of the purchaser, and of the person, if any, who introduced him, shall be affixed; and any person selling poison otherwise than is herein provided, shall, upon a summary conviction before two justices of the peace in England or the sheriff in Scotland, be liable to a penalty not exceeding five pounds for the first offence, and to a penalty not exceeding ten pounds for the second or any subsequent offence; and for the purposes of this section, the person on whose behalf any sale is made by any apprentice or servant, shall be deemed to be the seller;"—now comes the exception, "but the provisions of this section, which are solely applicable to poisons in the first part of the Schedule (A) to this Act, or which require that the label shall contain the name and address of the seller, shall not apply to articles to be exported from Great Britain by wholesale dealers, nor to sales by wholesale to retail dealers in the ordinary course of wholesale dealing." Then there is another interposition. Now comes the provision that applies to this case, "nor shall any of the provisions of this section apply to any medicine supplied by a legally qualified apothecary to his patient, nor apply to any article when forming part of the ingredients of any medicine dispensed by a person registered under this Act, provided such medicine be labelled in the manner aforesaid with the name and address of the seller, and the ingredients thereof be entered, with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose." Therefore, my lord, the first thing we have to discuss is, is this a poison within the first part of the section, or is it a medicine within the meaning of the section?

Mr. Justice Hannen.—He is only to be entitled to the benefit of that, if it is labelled in a particular manner, and this was not so labelled.

Mr. Quain.—Oh, yes, it had the name and address of the seller. I will come to that in a moment. Your lordship has just put your finger on what your lordship may say is the only difficulty in the clause. That cannot mean everything is to be labelled poison, my lord, as your lordship will see in a moment. I do not think it will be seriously contended that every bottle that goes out containing prussic acid as an ingredient is to be labelled poison. It is to be labelled with the name and address of the seller, and it was so labelled in this case.

Mr. Justice Lush.—Is that a proviso which only protects medicine supplied by an apothecary to his patients or dispensed by him?

Mr. Quain.—Dispensed by any person duly registered. My client, Mr. Berry, is a duly registered person, and he dispenses it in the ordinary course of business as a duly registered chemist.

Mr. Justice Lush.—Do you call selling over the counter dispensing it?

Mr. Quain.—Certainly; dispensing it is making it up and selling it over the counter. The words are, "Apply to any medicine supplied by a legally qualified apothecary to his patient."

Mr. Justice Lush.—It is not there.

Mr. Quain.—No, he is not an apothecary; but it also says, "Nor apply to any article when forming part of the ingredients of any medicine dispensed by a person registered under this Act."

Mr. Justice Lush.—Dispensed, that means administered, does it not?

Mr. Quain.—Oh, no. A dispensing chemist is the ordinary phrase. Dispensing is merely the making up and handing it over; it does not mean administering it.

Mr. Justice Hannen.—Virtually it seems to me, that a person registered under this Act may send poison abroad without any sort of protection. He may sell it to anybody he does not know.

Mr. Quain.—If it is a medicine. The first question to be discussed is, is it medicine within the proviso? About that there can be no doubt, because he makes it up from a regular prescription presented to him, signed by the initials of a well-known medical man. It is written in the ordinary way, and, as I said before, in Latin. The case finds that the component parts of it are proper for a lotion, and it is a lotion.

Mr. Justice Hannen.—Does it find that?

Mr. Quain.—Yes; the case finds it expressly in the 10th paragraph, my lord, "Hydrocyanic acid, Scheele's (that is the particular form of hydrocyanic acid) is prussic acid." The prescription is one that might be ordered for a lotion, and accordingly it is ordered for a lotion, because it is for external use. It is labelled by Mr. Berry "Caution, to be used for external use alone. To be used three times a day." If you look at the written terms, the thing is to be made into a lotion, and applied three times a day, on the face of the prescription itself. Therefore, it is a proper prescription for a lotion, and a proper medicine composed for the purpose of being applied externally. Therefore, we start with the proposition, and I think there can be no doubt of this, that medicine is not a thing to be taken internally alone. The term is to be applied just as much to medicine used externally as if applied internally. Therefore, we have the fact that this gentleman dispenses, in the way that word is always used, and I do not know that there can be any doubt about it. My friend Mr. Bullock says there is a definition in the Act.

Mr. Justice Lush.—Is there?

Mr. Quain.—This is it, my lord, the first clause, "That from and after the 31st December, 1868, it shall be unlawful for any person to sell or keep open shop for retailing, *dispensing*, or compounding poisons;" and then we have it again, "To be registered under this Act, and conform with such regulations as to the keeping, *dispensing*, and selling of such poisons." Your lordship will see by that phrase there is, first, the keeping poison, that is keeping it in stock; then, dispensing it, is making it up into the form of a prescription;

and then selling it, is handing it over the counter, and receiving money for it. A dispensing chemist is the common phrase for a chemist who merely makes up prescriptions, and sells them across the counter. I think, therefore, it is pretty clear, at least until I hear it disputed in argument on the other side, that what was dispensed in this particular case was a medicine within the meaning of the Act of Parliament. It was a prescription made according to the prescription handed to the chemist, made up according to the ingredients which are specified in that prescription, partly hydrocyanic acid and partly rose-water, and handed across the counter for a lotion. I do not think it can be seriously contended that this is not a medicine within the meaning of the Act of Parliament. Then, if it be a medicine within the Act of Parliament, has he complied with the regulations? The whole idea of selling to a person unknown to him, not introduced by a person known to him, that again depends upon whether he was selling a poison or not. It is perfectly clear that the early part of the section is limited solely to selling poison; he must not sell poison unless it is labelled "poison;" and he must not sell it to a person unknown to him unless that unknown person is introduced by some known person, and he must enter it in a book, not the ordinary book, but a book kept expressly according to the form of this schedule, which gives a particular form, as your lordships will see, for such entries,—the date, the name of the purchaser, the name and the quantity of poison sold, and the purpose for which it is required, and the signature of the purchaser, and the signature of the person introducing the purchaser.

Mr. Justice Lush.—That is where it is a poison?

Mr. Quain.—Yes, my lord, where it is a poison.

Mr. Justice Lush.—If this is a poison, he must not dispense. Then, as I understand, you contend it is within the proviso?

Mr. Quain.—That it is within this proviso.

Mr. Justice Hannen.—Then it must be labelled. Then it must be labelled with the name and address of the seller?

Mr. Quain.—So it is.

Mr. Justice Hannen.—You answered me as to that point before.

Mr. Quain.—Then if your lordships are with me as to that, Mr. Justice Hannen put his finger upon a point which at first sight might have a little ambiguity. The words are "Labelled in the manner aforesaid." One would suppose at first sight that should be labelled "poison," but when your end on you have got "with the name and address of the seller," which is different from what is within the previous part of the Section, where it says it must be labelled with the name of the article, and the word "poison," and with the name and address of the seller. Up to that part we have clearly complied with it. Now then comes this, "And the ingredients thereof be entered with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose." Now, have I done that? What has been done is this. This book clearly is not a book to be kept for poisons, that the early part of the section has made clear. That specified a particular form that is to be signed, not only by the purchaser, but by the person who introduces the purchaser, and the Schedule gives a form such as your lordships have got before you. Therefore, the book here is clearly not that book, but a book to be kept for the purpose of entering the ingredients of the medicine. In the other case, there are no ingredients of the medicine to be entered, but simply poison is to be entered in the other schedule. But this is a book in which is to be entered the ingredients of the medicine, with the name of the person to whom it is sold or delivered, in a book kept by the seller for that purpose. There is no doubt that this is entered in a book kept for that purpose, namely, the ordinary book, in which all prescriptions are entered, with the ingredients of which the prescription is composed. So far he has complied with the section. The remaining point is, has he given the name and address of the purchaser?

Mr. Justice Hannen.—The words are "to whom it is sold or delivered."

Mr. Quain.—"Name of the person to whom it is sold or delivered." Now what occurs is this, a prescription is presented with the name at the bottom of it, Mrs. Newton. Your lordships well know this is a common case which occurs every day. The moment a chemist sees the name of the person for whom it is intended, he does not inquire who brings the prescription, but he very naturally infers, and it is not found in this case, one way or the other, how the fact is, but he very naturally infers that this is a prescription for Mrs. Newton. Mrs. Newton is the patient, the person who buys. He sells to Mrs. Newton, he does not inquire who the messenger is, and the person to whom he sells is not the person who fetches the medicine; for, as we all know, servants are sent constantly to get prescriptions made up, and when a chemist sees a prescription written by a medical man for Mrs. Newton or Mr. A. B., he sells it to that person, and not to the messenger who brings the prescription. He enters it to Mrs. Newton, and surely he complies, in the ordinary way, with the Act of Parliament. That is done every day, and I think your lordship may take almost judicial cognizance that this is the ordinary course of business in these matters.

Mr. Justice Hannen.—There is no finding on that point.

Mr. Quain.—There is no finding, one way or the other.

Mr. Justice Hannen.—The 18th clause contains an objection which one must suppose the magistrates have found against you, "The name of Mrs. Newton, entered by the appellant, was not the name of the person to whom the article was sold, but only the name of a person for whose use it was alleged to be required." That was the objection.

Mr. Quain.—Yes.

Mr. Justice Hannen.—They seem to have found it was not for her.

Mr. Quain.—No, my lord.

Mr. Justice Hannen.—Not in terms.

Mr. Quain.—It was for the magistrates to have found it, and there is no such finding. All they find is this, in paragraph 11:—"No evidence was given that there was or was not any such person as Mrs. Newton." It was for them to prove their case that it was poison. They have to make it out to be poison. No evidence was given that there was any such person as Mrs. Newton. Ansell Johnson, the witness for the prosecution, refused to answer the two questions,—Did he buy it for Mrs. Newton? Did he buy it for himself? Therefore there is no evidence one way or the other for whom he bought it, except from the evidence that Mrs. Newton's name was upon the label. I say, in the absence of any evidence, that he did buy it for himself; that would be fair evidence in the absence of any evidence from which it might be inferred that it was a sale to Mrs. Newton. At all events it was a sale, as far as the chemist was concerned, to Mrs. Newton. He knew nobody else. Clearly it was not a sale to Johnson, because he did not know Johnson's name. He professed to sell to Mrs. Newton, there can be no doubt. There is no evidence that it was not a sale to Mrs. Newton. He professed to sell to Mrs. Newton. She was represented to him as the buyer, because, when a prescription is handed in with the name of Mrs. Newton in the corner of it, or when any other name is given as that of the person for whom the medicine is asked for, surely the medicine is supplied to that person. As far as the chemist was concerned unquestionably he was selling to Mrs. Newton, and therefore he enters it, in the ordinary course of business, in the name of Mrs. Newton as the buyer in his book, a book kept for that purpose. Therefore upon that point, I think, as far as this case is concerned, as far as the knowledge of the chemist no doubt was concerned, it was a sale to Mrs. Newton; and when you are recovering a penalty, your lordship knows (of course it is not necessary that I should cite cases in support of that proposition) his knowledge of the matter enters very seriously into the offence. It was represented to him that Mrs. Newton was the person for whom it was wanted, and he sold it to her beyond all doubt, because he knew nobody else to sell it to. That being so, I apprehend, under the proviso, they must make out that it is poison within the early part of the section. The moment you get to the fact that it was not sold as poison, that it was sold as merely one of the ingredients of a medicine made up as a lotion for the purpose of being applied externally, whatever may be the meaning of the proviso, the contention that it was poison within the meaning of the Act falls to the ground. As to the good faith, there is no doubt about that. He sold it in perfect good faith, and that he acted criminally, or even negligently, is not found in the case at all.

Mr. Justice Hannen.—It is a poison, Mr. Quain, as it is one mentioned in the schedule, if it is not a medicine.

Mr. Quain.—I am not disposed to admit that, because all I find in the schedule is prussic acid. I say this is not prussic acid. I say if you dilute prussic acid with rose-water it is not prussic acid within the meaning of the schedule. Up to what point does it remain prussic acid would be a question to be nicely argued; but I rely upon the proviso, and contend that he has brought himself strictly and entirely within the proviso. I say he has done everything that he is required to do.

Mr. Justice Lush.—What is the difference between dispensing and compounding?

Mr. Quain.—I do not know that there is any.

Mr. Justice Lush.—The statute uses both.

Mr. Quain.—In strictness, it might include compounding and selling it across the counter.

Mr. Justice Hannen.—It is only a fine word like "exhibiting."

Mr. Justice Lush.—They do not appear to be the same terms if they mean the same thing. One person produced a certificate in order to qualify himself, showing that he had been employed three years in compounding prescriptions, and another brought a certificate that he had been engaged in dispensing and compounding.

Mr. Quain.—Practically I do not know that there is any difference between them.

Mr. Justice Lush.—The statute uses both, without giving the meaning of each word.

Mr. Quain.—I find them used in that very Act. "Whereas it is expedient for the safety of the public that persons keeping open shop for the retailing, *dispensing*, or compounding of poisons, and persons known as chemists and druggists should possess a competent practical knowledge of their business." Both words are there used, dispensing or compounding. I think perhaps dispensing includes selling; but there is no doubt, my lord, that it means either the actual making up of a prescription, or it means making up the prescription, and selling the result. Whether the dispensing would include selling or not I do not know, and there may be a dispensing of the simple ingredients without compounding it. Perhaps that is the distinction.

Mr. Justice Lush.—What is dispensing, then?

Mr. Quain.—I believe dispensing means making up a medicine and selling it. Making up a prescription and selling it, is what is called a dispensing chemist.

Mr. Justice Hannen.—Does it include selling? The matter of usage includes the selling, but, I think, its technical meaning is making up.

Mr. Justice Lush (reading from a dictionary).—"To distribute; to deal, or to apportion; to give a portion."

Mr. Quain.—It has nothing to do with administering it.

Mr. Justice Lush.—No; it has not. I thought it had. I fancied it was used in the Apothecaries Act. Can you say that this prussic acid formed part of the ingredients of the lotion in the sense in which that phrase is used?

Mr. Quain.—Surely. I believe it is a very common lotion for irritant skin diseases. Prussic acid and rose-water make a very ordinary lotion.

Mr. Justice Lush.—The words rather suggest to one's mind a case where it is neutralized or qualified by some other ingredient.

Mr. Quain.—Oh, no, my lord; that depends entirely upon a question of chemistry whether it is a mere dilution or a change of character.

Mr. Justice Lush.—This would evidently be a mere dilution.

Mr. Quain.—That is the usual way, my lord. There is no chemical action in making up a prescription. If there were, that would destroy the whole thing. If there were any chemical action in the prescription, the original thing would disappear. There would be something new produced entirely. These medicines are mere mixtures. They are not chemical combinations. They are always mixtures. It is only a question of the quantity of the one and the quantity of the other. I am not aware that medicine ever depends for its action on chemical action.

Mr. Justice Hannen.—Oh, it does, Mr. Quain. You must not say it so broadly. Take the case of a seidlitz powder.

Mr. Quain.—Oh, I am not talking about that.

Mr. Justice Lush.—This proviso might have been necessary in order to cover medicine which contained a very small proportion indeed of prussic acid, so that the whole compound was not poisonous. A proviso would be necessary to cover that sort of thing; but suppose the thing sent out is essentially a poison, how is that protected by the proviso?

Mr. Quain.—Whether it is essentially a poison depends entirely on the person who takes it. There are some persons who might take medicines which might poison another person. In certain classes of cases people might take a quantity of strychnine which would poison me or your lordship. It depends entirely on the person and the disease that the person is suffering under. The quantity of strychnine that a person suffering under paralysis would take would poison another person, while it would scarcely have any effect on the person taking it. It depends entirely on the recipient. This is the 5th section of the old Apothecaries Act, 55 Geo. III. c. 194: "And whereas it is the duty of every person using or exercising the art and mystery of an apothecary to prepare with exactness, and to dispense such medicines as may be directed for the sick by any physician lawfully licensed to practise physic by the President and Commonalty of the Faculty of Physic in London."

Mr. Justice Lush.—That is, to give the patient directions how to use it, I suppose.

Mr. Quain.—Yes, my lord; and in clause 20 we have got this: "And if any person shall, after the 1st day of August, 1815, act as an assistant to any apothecary, or compound or dispense medicines, without having obtained"—and so on. So that you have this word used with a quantity of other words in section 28: "That nothing in this Act contained shall extend, or be construed to extend, to prejudice or in any way to affect the trade or business of a chemist and druggist in the buying, preparing, compounding, *dispensing*, and vending drugs, medicines, and medicinal compounds wholesale and retail; but all persons using or exercising the said trade or business shall," etc. etc. I apprehend that the moment a prescription which professed to be written by a lawfully-qualified medical man is brought to a chemist, written in the ordinary way, that chemist, acting in perfect good faith, and when he sees that it is a medicine for a lotion, puts up any of these ingredients (for, whether it it is for the purpose of external or internal application makes no difference) in the ordinary way of business, and inserts the name of the person to whom he professes to sell it in a book kept for that purpose, he clearly brings himself within this proviso. What is he to do? When he is making up a prescription he cannot go into the ingredients to see whether it is a poison or not, or to what extent it is a poison. He may not know the effect of the medicine ordered by the medical man; it may be a poisonous medicine or it may not.

Mr. Justice Hannen.—He knows whether it is one of the things mentioned in the schedule.

Mr. Quain.—Any other view of it would be this: that the moment any medicines contain any of these poisonous compounds, however small, he is to label them "Poison." Just fancy if all the bottles that came into our families for the purpose of external application or internal use had the word poison on them.

Mr. Justice Lush.—But he uses equal quantities of prussic and rose-water, does he not?

Mr. Quain.—I do not know the quantities. I do not profess to understand these things. It does not appear on the case.

Mr. Justice Lush.—There are the same marks to both.

Mr. Quain.—I think not. If your lordship will look, there is another tail to one; they are not the same.

Mr. Lumley Smith.—It is expressly found, my lord, in the case, that there were two drachms of hydrocyanic acid put into a two-ounce bottle.

Mr. Quain.—And then he filled up the bottle with rose-water. There is a great deal more rose-water. I do not know how many drachms go to an ounce, or whether Mr. Lumley Smith could tell me. Now, my lord, the other statute, which was passed on the same day as this conviction took place is this. It only becomes material in case you should have any doubt about the construction of the proviso, namely, how it is to be labelled. If there was any difficulty at all about the construction of the latter, I should have said that this was declared on the same day the offence was committed. I should read the recital, because the object is to put qualified medical practitioners, not merely apothecaries, into the 17th section: "Whereas it is expedient to amend the provisions of the Pharmacy Act, 1868, in regard to duly-qualified medical practitioners and veterinary surgeons." The 17th section was applied, if your lordships remember, to medicines supplied by a legally-qualified practitioner to his patient.

Mr. Justice Hannen.—You do not seek to come under that part of it?

Mr. Quain.—No, my lord, I only point out what was the object of amending the Act.

Mr. Justice Lush.—That was the only amendment?

Mr. Quain.—That is all. "Nothing contained in section 17 of the said recited Act shall apply to any medicine supplied by a legally qualified medical practitioner to his patient, or dispensed by any person registered under the said Act, provided such medicine be distinctly labelled with the name and address"—showing what the meaning of the other section was—"of the seller, and the ingredients thereof, be entered with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose."

Mr. Justice Lush.—That is the same as the other.

Mr. Quain.—It is the same practically.

Mr. Justice Lush.—It only extends it to legally qualified medical practitioners.

Mr. Lumley Smith.—It gets rid of the ambiguity in the phrase, "in the manner aforesaid."

Mr. Justice Lush.—And extends it beyond apothecaries.

Mr. Quain.—Yes, my lord, that is the only difference. Your lordship sees that the statute applies to duly qualified medical practitioners, who also dispense medicines, which, I suppose, applies to what are called general practitioners. These would be equally responsible if they sent out any of these ingredients as a medicine, just the same as this chemist, and, therefore, the extent to which this decision of the justices, if it be upheld, would go, would, I apprehend, be of the most serious description. It is a very common thing, if people are travelling, to have a prescription made out in their own name, and then they go into any chemist's shop in the country where they may happen to be, and have it made up.

Mr. Justice Hannen.—It is very odd that the Act does not require the name and address of the buyer to be included in the entry.

Mr. Quain.—It does not. It says the name and address of the seller, but not the name and address of the buyer. The idea appears to be this. Supposing, as I said before, the case that occurs very commonly, of a person travelling. He has a prescription which he has been in the habit of using; he comes to a town, and goes into a chemist's shop, being a perfect stranger; he hands in his prescription to be made up in the ordinary way, and it contains prussic acid, or any of these ingredients which are mentioned in the first schedule; surely a chemist, if he *bonâ fide* makes it up in the ordinary way as a prescription, and hands it over the counter to the person whose name it bears, and enters that name in his book, *primâ facie* has complied with the Act of Parliament. He sells it to the person for whom it is intended, and that person's name is entered in the book according to the proviso.

Mr. Justice Lush.—If this had been a lotion supplied by a medical practitioner to his patient directly, it would not have been within the Act.

Mr. Quain.—Why not?

Mr. Justice Lush.—It would not have required the word "poison." It would have been no offence? That is your argument.

Mr. Quain.—On the contrary, I say there is no difference between medicine dispensed by a legally qualified practitioner and by this chemist.

Mr. Justice Lush.—I say, if this had been sold by a medical man attending Mr. Newton, it need not have had the word "poison."

Mr. Quain.—Certainly not.

Mr. Justice Lush.—And your argument is, that the same part of the section applies to a person dispensing it?

Mr. Quain.—Precisely. It appears to me it would be a most alarming thing, if any medicine happened to contain any one of these ingredients, that it should be labelled "poison." It would be rather an alarming thing than otherwise. The statute evidently means to draw a broad line of demarcation between the sale of poisons proper and the sale of medicines. There is one of these things in Schedule (A), which, I think, most of us, in some part of our lives, are very familiar with, my lord,—tartar emetic. We know what tartar emetic is very well, and we know what it is taken for; and if it had "poison" always written on the outside of it, certainly a great many patients would never be induced to take it at all. Why tartar emetic should be put into this schedule at all, I do not know; it is a thing we take every day of our lives. As your lordship knows, it is merely tartarized antimony, that is taken internally. But according to this, the moment you get what is commonly called an emetic, it is to be labelled "poison." It is perfectly plain that never could have been intended. There is another article here, aconite, which is well known as a homœopathic medicine, which is constantly taken nowadays. I never heard that there was any necessity, when you take it as a medicine, that it should be labelled "poison." And so I might go on to any extent. It is plain what the statute meant, surely; when you sell poison, *quoad* poison, you shall label it as such, but not when you make up a prescription in the ordinary course of business as a medicine, and sell it as a medicine, professing to sell it as a medicine, most certainly, in the most perfect good faith, as in this case, having put on it, as he did here, "For external application only. Caution." That is the way these things are labelled now, and that would indicate certainly that it was not to be taken internally. Having, therefore, complied with all the provisions of the Act of Parliament, I submit that the conviction is quite wrong, and that it would lead to very serious consequences if it were right. I do not know how the business of a chemist and druggist could be carried on, if every time he put prussic acid, or tartar emetic, or cyanide of potassium,—which, I see, is another article mentioned in the schedule,—into a prescription, he was not only bound to put the name of the medicine outside, and how it was to be taken, but, in addition to that, to label it "poison;" and also that then it was to be entered in a particular book, with the name and address of the purchaser, and even the very object stated for which it was wanted. If your lordships will look at the character of the things, you will see what the idea is. Some of them are well known, and are used for improper purposes. You will see at once what the idea is.

Mr. Justice Hannen.—It would require, apparently, the name of the purchaser, and the person who introduced him also.

Mr. Quain.—And the signature, and the purpose for which it was required, the name and quantity of the poison, the name of the purchaser, and so on. I apprehend, therefore, that it cannot be a poison within the meaning of that Act, and I have brought it within the meaning of the proviso, and shown it to be a medicine, and that he has *bonâ fide* complied with the Act of Parliament. Then, lastly, it cannot be seriously contended that he can be convicted of two penalties for the same act. They first convicted him of selling poison to a person unknown, without being introduced by a person known, and then they convicted him in another distinct penalty for identically the same act on the same day, for sending out and dispensing a poison without having a proper label on it. It is scarcely necessary to cite cases to show that that cannot be done. That is the only other point in the case.

Mr. Lumley Smith.—I appear to support the conviction on this occasion; and, with respect to the point that my learned friend has alluded to, of the Pharmacy Act of 1869 having come into operation on the very day on which this offence was said to have been committed, I should not wish to give him or your lordships any trouble as to that, because it is important, both to the police authorities, by whom this conviction was obtained, and it is important also to all the chemists of the United Kingdom, that the present state of the law should be declared, and not that we should have a decision upon an Act that is no longer in force. So that, as far as that question is concerned, I am perfectly willing, for the purpose of this argument and on public grounds, to admit that the second Act was in force. But it appears to me that that will make no difference in fact, because it merely changes the terms of the proviso within which the appellant has to bring himself. I shall submit to the Court that clearly it does come within the first part of the 17th section, unless he brings himself—and the burden of proof is on him to bring himself—within the proviso at the end of that section, or within the proviso of the Act of 1869. Now, my lords, I submit, in the first place, this is clearly one of those cases which the Act of Parliament was intended to meet. Here, in fact, we find from the case that a man has attempted to commit suicide. It is found that he has done so.

Mr. Quain.—Oh, no!

Mr. Lumley Smith.—It states that he has attempted to commit suicide.

Mr. Justice Hannen.—No, he is charged with it.

Mr. Lumley Smith.—He is charged with having attempted to commit suicide with this—

Mr. Quain.—No, not with this. Pardon me, that is not the state of the case at all.

Mr. Lumley Smith.—It is sufficiently clear.

Mr. Quain.—Oh, no, that will not do. It is not so stated. And your lordships will remember this is a penal application.

Mr. Lumley Smith.—It brings it back to this. Is a chemist entitled to sell poison in the way in which this chemist appears to have done without the restrictions that are put upon it by the first part of the section 17? Now, my lords, I submit that the object of this statute was twofold. The first object was to prevent poisons being obtained for improper purposes, and in the next place to preserve evidence of the person to whom the poison was supplied by the chemist. And that does away with the objection that was suggested just now, that in the case of an actual apothecary, a legally qualified apothecary, supplying any medicine to a patient, it would be unnecessary, in a case of that sort, to have these labels placed upon the bottles, because the law relies on his knowledge, his skill, and care, and that in a case of that sort there would be neither the danger of poisons being employed or obtained for an improper purpose, nor any danger of the poisons being delivered to a person of whom no record was kept. I submit, in the first place, that clearly this case is within the first part of the section of the Act of Parliament, that is, it is clearly a poison. There is no doubt that prussic acid is a poison, although it be diluted with water. It is a matter of common knowledge that rose-water and ordinary water are used equally by medical men as the fancy of one medical man or another dictates, or just as the mixture may be supposed to be more acceptable to the person who is to use it. It is distinctly found in this case that rose-water has no medicinal virtue at all. So far as the magistrates have found the facts of this case, they have found that this was merely diluted poison. The argument was raised before the justices that it was diluted poison, and they by their conviction have found that it was diluted poison. Now, my lords, that being so, I submit that the appellant clearly comes within the section, unless he brings himself within the proviso. Now comes the first question, whether it is a medicine? There may be some difficulty in maintaining that medicines were only intended in this Act of Parliament to apply to things for internal application. There is no doubt that if one goes to the etymology of the word, it applies equally to internal and external applications; but still I cannot help thinking that the intention of the Act was, in that proviso, to apply to medicines for internal use, in which a very small portion of poison may be introduced, and to say that in a case of that kind, where there was a small amount of poison so slight as to be harmless, and so where the whole mixture was not poisonous, it should not be necessary to label this poison, and to take the name and address of the person who buys it, as if it had been actually poison. The word is "medicine." Now comes the question, whether a merely diluted poison is different from poison undiluted? As my learned friend said, aconite is frequently bought and sold. It is a good thing for applying to cure the tootache; and that again might be used undiluted; and, according to my learned friend, aconite might be sold over the counter, without any restrictions, to a person of whom the chemist was perfectly ignorant without his being liable to a penalty under this Act if wanted for the toothache. Surely, I submit, if the whole compound is poisonous in itself, it does not cease to be poisonous because it is a medicine. I submit that the notion of that section clearly was to apply to cases in which only a small part is a poison, so that the mixture itself becomes harmless. There is evidence only in the word ingredients. Can there be a medicine within this proviso unless it has medical ingredients? I should submit, it applies simply to medicines where one ingredient corrects the other; where from the mixture, or from the small quantity of the poison in each, the whole mixture is not poisonous; not medicines in which there are no ingredients. Can it be said that merely diluting a poison makes it into a medicine having different ingredients? You see that even in the case where the word "medicine" is used. In the old Act it applied to any article forming part of the ingredients of a medicine. In the new Act the word is "medicine;" but there again it says that the ingredients are to be entered in a book, provided such medicine be distinctly labelled, with the name and address of the seller, and the ingredients be entered in a book to be kept by the seller for that purpose. I submit that the intention of the legislature was simply to apply to cases where the body of the medicine had become harmless; where there were ingredients that corrected the effect of the poison. They say in cases of that kind it shall not be necessary to have an introduction to the person who buys, because the thing itself has ceased to be poisonous. The next question that arises is, whether this person has entered this medicine properly in a book?

Mr. Justice Lush.—What do you say, Mr. Smith? Supposing this had been given as a lotion by a legally-qualified practitioner to his patient? He would have been within the protection of the proviso?

Mr. Lumley Smith.—Probably it would if given by a legally qualified person to his patient.

Mr. Justice Lush.—Then Mr. Quain's argument is, that being found in the same sentence, if this would have been protected when given as a medicine by a legally qualified medical practitioner, it is equally protected as a medicine dispensed by a regular seller. The same words are used.

Mr. Lumley Smith.—That certainly is the contention.

Mr. Justice Lush.—Must not you show that this would not have been protected if it had been administered or given by a legally qualified practitioner as a lotion to be used; that he would have been liable to a penalty if he had not affixed a label with the word "Poison"? It says, "None of the provisions of this Act shall apply to any medicine supplied by a legally qualified practitioner to his patient."

Mr. Lumley Smith.—Then your lordship sees there is this difference. There the word "medicine" is used when given by the qualified practitioner as a lotion to be used. The medicine supplied is used.

Mr. Justice Lush.—So it is in the other case: "When forming part of any medicine dispensed by a person registered under this Act."

Mr. Lumley Smith.—Of course it comes to this, that if the word medicine applies to a lotion as well as to medicine for internal use, of course it must be interpreted in the same way, both for an apothecary and for a person who is dispensing it as a chemist.

Mr. Justice Lush.—Do you contend that the word medicine does not embrace lotions?

Mr. Lumley Smith.—I feel a difficulty about it, because the word medicine does mean anything that heals or cures.

Mr. Justice Lush—Externally or internally?

Mr. Lumley Smith.—Of course. There is that difficulty; but I cannot help thinking that when that Act was drawn, it applied to medicines which used to be poisons because other ingredients were mixed with them.

Mr. Quain.—A thing may be poisonous externally.

Mr. Lumley Smith.—Something may turn on that word "dispense," because in the preamble of the Act it speaks of the retail dispensing or compounding poisons. Now selling would correspond with retailing, and dispensing probably would mean supplying and administering, and compounding would mean the mere mixing. Your lordship knows that in public hospitals there are regular dispensers, who have actually to mix and supply the medicines.

Mr. Justice Lush.—And label them with the directions how they are to be used.

Mr. Lumley Smith.—This section does not extend protection to any chemist who is retailing, dispensing, or compounding. It confines it to the word "dispensing." And that would look as if it were to be confined to the case in which he was acting simply, as making up a prescription. And I should submit, with respect to this prescription, it lies on him to show in fact that this was a medicine. The case merely finds that this mixture might be used as a lotion. It is for him to bring himself within this proviso. He ought to have produced proof that this Mrs. Newton was an existing person.

Mr. Justice Lush.—Must we not take it here that it was his *bonâ-fide* belief that this was a prescription for a lotion for Mrs. Newton?

Mr. Lumley Smith.—I do not think *bonâ-fide* belief applies to a case of this sort, and for this reason: he is liable to this penalty if the mixture is made up or sold by his apprentice or servant. It is not a case in which *bonâ-fide* belief has anything to do with the matter, as I submit. The thing that is forbidden is allowing poisons to go at large, and to be obtained by persons who might make an improper use of them. I submit that that clause which renders him responsible for articles supplied in his shop by his apprentice or servant would rather go to show that it is not a case in which he would be relieved by his *bonâ-fide* belief. We show that he has sold a poison, and he has to bring himself according to the ordinary rule within the exception; and to show that if he has sold a poison he is not to be convicted in this penalty because he comes within the exemption. Therefore it is for him to show that there was a Mrs. Newton, and that this prescription, about which there is some mystery,—for it is not found by the magistrates either way whether "R. M. L." was really the signature of a physician or not; the whole thing is left in the dark; they merely find that there is a physician who has these initials,—it is, I say, for him to bring himself within that exemption, and to show affirmatively that this was a prescription for a real Mrs. Newton. And it would seem that if this had been a real prescription, that the chemist would have had very little difficulty in proving that. I submit that there is no hardship on the appellant in saying that he ought to prove affirmatively that there did exist such a person as Mrs. Newton, because he has the remedy in his own hands. When a prescription of this kind is brought into his shop by a person who is a perfect stranger, he can shelter himself by saying, "This is a case in which I must label it in the way in which it is prescribed by the Act of Parliament—in which I have a right to say you must be introduced to me."

Mr. Justice Hannen.—The proviso does not require that, if it were a medicine.

Mr. Lumley Smith.—Quite so, my lord, if it is a medicine. But I say it is not enough to show that it might be a medicine; he ought to go further and prove that it was a medicine, because just as prussic acid alone, undiluted, might be medicine, (if, diluted, prussic acid would be fit as a lotion, why should not prussic acid itself be fit for a lotion?) and in that case the Act of Parliament would be done away with. Aconite itself is used as a medicine in the cure of toothache, pure and simple; and if that construction of the Act were correct, any one might go into a chemist's shop and buy aconite, and say, I bought it as medicine; and a chemist might say, I am entitled to sell aconite because it is a medicine. So in the same way he might sell prussic acid, and then bring himself within that proviso by saying that it was a medicine, that it was intended for a medicine for the person for whom it professed to be bought.

Mr. Justice Lush.—You mean to say, he ought to show the fact, that some physician bearing those initials, did, in fact, issue the prescription? But that would impose a great difficulty in the way of chemists.

Mr. Lumley Smith.—He might avoid that by saying, "I shall not dispense this until I have the protection of the Act for the Regulation of the Sale of Poisons." He has the remedy in his own hands. Here is simply a prescription on a piece of paper, that anybody who wished it might forge at a moment's notice. It has not even the name of the surgeon who prescribes, and there is no address of the person for whom it is intended. If this construction is correct, any person who wished to commit suicide, or who wished to use poison for an improper purpose, has only to take a false prescription into a shop, and be supplied with what he asks for. Then, my lords, he has to go farther. Assuming that he has shown that this is a medicine, he has to show, further, that he has complied with the regulations of the Act of Parliament. And the first of these is this,—that he must enter the name and address of the seller, and the ingredients, with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose. I submit, in the first place, that the name of Mrs. Newton, entered by him in his book, was not the name of the person to whom it was sold or delivered. The object of the Act was to preserve evidence against the person who actually received the goods over the counter.

Mr. Justice Hannen.—Oh, no. It says the buyer, not the person to whom it is delivered only.

Mr. Lumley Smith.—Sold or delivered.

Mr. Justice Hannen.—Suppose he had asked the question of a servant, Whom do you come from? and the answer had been, Mrs. Newton, would he have been bound to go and ascertain whether there was such a person?

Mr. Lumley Smith.—I submit that the proper person to be entered in his book which he has to keep, is the person who actually receives it. When you come to deal with an actual person, it is under Schedule (A), and you must have, not merely the name of the purchaser, but the signature. Supposing this is a poison sent for by Mrs. Newton; supposing Mrs. Newton had sent Ansell Johnson for this poison, whose signature would go into the book then? Surely not Mrs. Newton's, but the person who actually received it.

Mr. Quain.—Pardon me; it is the signature of the purchaser, not the person who receives it.

Mr. Lumley Smith.—How can the purchaser sign if he has not gone there and bought it? What is the signature required? It is the signature of the person who actually receives the article. It provides that the signature of this person and the person who introduces him, shall be affixed. If the person who fetches it is not the actual purchaser, it would appear from that that the actual purchaser must go down and sign.

Mr. Justice Hannen.—You are not on the proviso now?

Mr. Lumley Smith.—No, my lord, I was going back again to the former part of the clause. The proviso says this, "That the name of the person to whom it is sold or delivered, shall be entered in a book to be kept by the seller for that purpose." That is Ansell Johnson. His name ought to appear.

Mr. Justice Hannen.—That would appear as the name of the person to whom it was delivered; but what effect are you going to give to the words, "to whom it was sold"?

Mr. Lumley Smith.—I should submit that probably brings it back to that clause in the preamble which speaks of chemists retailing or dispensing. There are many cases in which a chemist delivers a mixture or a lotion, or whatever it may be, without selling it, there may be cases in which he actually administers it. I should say retailing would apply to the selling, and delivering to the cases in which there had been no sale. In all these cases, as far as I have been able to see, it is the actual person who goes to the shop of whom a record ought to be kept. With respect to these poisons mentioned in the first part of the section, the actua signature is required. And so again in the Arsenic Act, mentioned in this Act, which is the 14 & 15 Vict. c. 13, there, again, no arsenic is to be sold unless there is a form filled up, which is given in the schedule. There the name and surname of the purchaser are given, the place where it is bought, and he has actually to sign it. And where, in the first part of the clause, the signature is required, and in the latter part I should submit that the words, "sold or delivered," mean the person to whom the sale is actually made, or the person to whom it is actually delivered. The result is, that when the purchaser, such as Ansell Johnson, is found in a state of collapse from having drunk prussic acid—

Mr. Quain.—Oh, no. I am told he attempted to cut his throat; he did not take the medicine at all. My learned friend has got the bottle, and I am told it is in the same state now as when it was dispensed.

Mr. Lumley Smith.—It seems to have been a horrible tale altogether.

Mr. Justice Lush.—Have you got the prescription? It is made part of the case.

Mr. Quain.—I believe my friend Mr. Smith has the bottle, my lord; I have not got either.

Mr. Lumley Smith.—Again I say, this book ought to be kept for this particular purpose. There can be no doubt that if inquiry had to be made, assuming some person were found in the street in a state of collapse from having drunk prussic acid and rose-water, and it was desired to find at what chemist's the poison had been purchased, it would be useless to go to a chemist in a large way of business, and ask him to wade through the whole of the entries in his ordinary prescription-book, because the number of items probably would be so great, that there would be considerable difficulty in saying what person was intended.

Mr. Justice Lush.—You do not mean to say that he is to have a separate book for every separate article?

Mr. Lumley Smith.—No; but for the poisonous ones. There is no doubt he must have one book for the poisons, pure and simple.

Mr. Justice Hannen.—Was there not a number put upon this prescription?

Mr. Lumley Smith.—I am afraid of travelling out of the case.

Mr. Justice Hannen.—It is part of the case.

Mr. Lumley Smith.—He indexed the entry.

Mr. Justice Hannen.—You cannot make an index without some reference to the thing indexed, and therefore there would be some easy means of ascertaining what this prescription was.

Mr. Lumley Smith.—If the name was known; but the index is merely to the name and the page in the book. Now the Act of Parliament says it must be a book kept for the purpose. The question is, whether it means for that purpose only, or whether it is the book in which he enters all his prescriptions. The Act of Parliament has not said "for that purpose only;" but certainly, as far as the practical utility of the thing goes, it would be much more easy to trace a thing of this sort if it were in a book in which poisons only were entered, instead of being entered with all other prescriptions. However, upon this part of the case, I have to submit very strongly that the name that ought to have been in was the name of Ansell Johnson, and not the name of Mrs. Newton. Now, with respect to the second case, no doubt a mitigated penalty has been imposed for each offence. He has been convicted of two different infractions of the law. Of course if the decision of this Court is, that the conviction is wrong in either case, and that this was not a poison, it is unnecessary to go at all into the question of the second case; for assuming that this is a medicine, assuming that he was not bound to enter the name of the person to whom it was sold, the question is, whether he can be convicted also for having sold without labelling it "poison."

Mr. Justice Lush.—The language does not seem to suggest to me that he can be liable to a double penalty for the same act. It says, "If any person shall sell poison otherwise than as herein provided, he shall for the first offence forfeit so much, and for the second, or any subsequent offence, so much. No matter how far he deviated from the Act, what the statute does is, to render him liable to one penalty for each act. You can hardly find words here to justify for accumulated penalty for each variation from the Act.

Mr. Lumley Smith.—Then the question may arise, and in that respect it may be important that it should be considered that the second case was disposed of under the old Act, because there it is, "labelled in the manner aforesaid," which is an ambiguous phrase. It may mean simply by labelling the bottle with the name and address of the seller, or it may mean labelling it with the word "poison."

Mr. Justice Lush.—It is clear it does not mean that. It is "labelled" in the manner aforesaid, with the name and address of the seller

Mr. Lumley Smith.—If it really comes to that, it makes very little difference, because if one conviction is good, it does not much matter what the effect of the second is; and if the first is bad, of course the second is bad also.

Mr. Quain.—I would only make one observation, which is this: I think it is pretty well established from what fell from your lordships, this having been tried in this way, that this is a medicine within the proviso.

Mr. Justice Lush.—Mr. Quain, the difficulty we find is, that there is no finding upon this case, to the effect that the defendant would reasonably have believed that this was a prescription given to Mrs. Newton by the medical man, whose initials it purported to bear, at all. It appears to have come to him in a very loose shape.

Mr. Quain.—It is a very common thing, my lord.

Mr. Justice Lush.—I do not know that. It may be, or it may not be. I never saw one. But here is a prescription, directing the composition of very poisonous things indeed, upon a piece of paper in pencil, bearing initials which are not said to have even appeared to be the initials of the person whose they purported to be.

Mr. Quain.—Oh, yes, my lord, it is so found.

Mr. Justice Lush.—Only that there was, in fact, a medical man, whose name justified those initials. Supposing this gentleman received it, without the least inquiry, over the counter, when he ought, as a reasonable, prudent man, to have made inquiries, I can conceive a state of things in which he would be then unable to bring himself within the protection of the proviso. On the other hand, I can hardly think that the proviso meant to cast upon every person who sells medicines the duty, at his peril, of ascertaining that it is a genuine prescription.

Mr. Quain.—I certainly understood that was the nature of the case, that he acted *boná fide.*

Mr. Justice Lush.—If he had no reason to believe it,—if he carelessly put it up, without knowing the person who brought it, or the handwriting, or making any inquiry about it, could it be said that the brought himself within the proviso?

Mr. Quain.—I certainly understood the case, that he acted with the most perfect good faith.

Mr. Justice Lush.—So I thought at first, but there is no finding at all.

Mr. Quain.—No such point was made before the justices.

Mr. Justice Lush.—It is a very serious matter, and persons intrusted with the sale of these articles ought to exercise reasonable caution.

Mr. Quain.—I have no doubt, if such a point had been raised before the justices, he could have met it.

Mr. Justice Hannen.—One of the questions is whether, in point of fact, the appellant regarded the requirements of the proviso?

Mr. Justice Lush.—I am unable to answer without knowing what his conduct was.

Mr. Quain.—Would your lordship send it back again to have it re-stated?

Mr. Justice Lush.—It would be more satisfactory.

Mr. Quain.—This was a case in which he could not give evidence on his own behalf.

Mr. Justice Lush.—I think it is obvious that every one who is entrusted with the sale of these things is to take all reasonable care.

Mr. Quain.—It is not found that he acted with bad-faith or unreasonably, or in any way in which his good faith can be called in question.

Mr. Justice Lush.—Is that a finding of a fact?

Mr. Quain.—Surely it is for the accuser to make it out if it is a fact. I assume that if the chemist acted unreasonably or incautiously or negligently, or that he could challenge him on any one of these points that are necessary in order for the offence to be established, it is for the accuser to make that out. I had not the least idea that his good faith would be called in question for a moment. There was no evidence given to the contrary. It was not challenged before the justices.

Mr. Justice Lush.—There is no finding one way or the other. We have simply the finding as a matter of law, if this was in fact poison, and prussic acid, although not pure and simple, whether mixed with rose-water or mixed with an equal quantity of some other ingredient, is just as much a poison.

Mr. Quain.—Pardon me. There were nearly two ounces of water and only two drachms of prussic acid. You may dilute prussic acid until it is not poisonous.

Mr. Justice Lush.— There is no reason to suppose that it would not kill anybody.

Mr. Quain.—That is a very small quantity. You may dilute prussic acid to such an extent that it becomes perfectly innocuous.

Mr. Justice Hannen.—Has he entered the name of the person to whom he sold or delivered? It is plain he has not entered the name of the person to whom it was delivered. The question is, have you proved that you have entered the name of the person to whom it was sold. So far as it is a question of fact, there is no finding of the fact that there was such a person as Mrs. Newton. That must depend upon the fact whether he believed there was such a person as Mrs. Newton. Upon that there is no finding at all.

Mr. Quain.—The justices, no doubt, put it upon that ground. They have not found that there was no such person.

Mr. Justice Lush.—They put us two questions which, as at present advised, I am unable to answer as matter of law one way or the other. This very same thing may be poison or may be medicine.

Mr. Quain.—That is not found in the case.

Mr. Justice Lush.—You will hardly say that any person going into a shop without any prescription at all, and saying, I want two drachms of prussic acid in a two-ounce bottle with rose-water, and if he had sold that he would not have been within the requirements o the section unless he marked it poison.

Mr. Quain.—That would depend upon whether it was intended for medicinal purposes or not.

Mr. Justice Lush.—I am putting the case of a person going in, and asking for it without saying anything at all.

Mr. Quain.—I should say that was within the Act; but this was a prescription written in the regular medical language.

Mr. Justice Lush.—But if he goes under such circumstances that no reasonable person could believe it to be a prescription, then it is not a thing that will be a medicine. I do not impute it to him that it is so, but, before giving judgment upon an important section like this, it seems to me that we ought to have all the facts.

Mr. Quain.—I believe it was proved, my lord. I do not know why it does not say so, that there was a Mrs. Newton living within 300 yards of the place.

Mr. Justice Lush.—There is no finding. We do not know the fact. *Primâ facie*, he sold poison.

Mr. Quain.—I should have thought that if they had to convict him for a penalty, all that should have been proved. The onus is upon them evidently, and not upon us.

Mr. Justice Lush.—I do not know whether they intended that we were to draw our own inferences, as they sent up the prescription and the bills, and all that to us.

Mr. Lumley Smith.—The justices seemed to have acted upon the view that it was for the defendant to show that there was a Mrs. Newton. At any rate, they do not seem to have thought that it was for them to prove it. As far as the case goes, it throws a doubt on the existence of Mrs. Newton. It speaks of some person for whom it was alleged to be bought.

Mr. Justice Lush.—On the other hand, you could hardly suppose that he should, at his peril, ascertain whether there was such a person.

Mr. Quain.—I understand the bottle is produced to show that it was what is called a corrugated bottle, showing that it was such a bottle as is used for external applications. If you cannot get a prescription made up until you have proved that there is in existence the person for whom it is used, a man might be dead before that proof was produced to the satisfaction of the chemist. If that is the law, the conviction is a very important one.

Mr. Lumley Smith.—I do not know that the conviction itself is of great importance. You appear for the Pharmaceutical Society, do you not?

Mr. Quain.—Yes; but they do not desire to have a conviction against one of their members.

Mr. Lumley Smith.—I should think this was a case in which the object of both parties was to have an enunciation of the law, and that the mere conviction is of no importance. I appear for the police authorities, and my learned friend appears for the Pharmaceutical Society. The mere actual conviction is not of much importance.

Mr. Justice Lush.—Then, I think we need not trouble you any further, Mr. Quain. Assuming that we are to draw inferences, which, at present, I am not disposed to, as under the circumstances, taking the case as if it stood as the finding of the magistrates, in point of fact, that this gentleman did really believe that when he was dispensing this prescription he was making up a prescription which had been actually given by a medical man to Mrs. Newton for a lotion; as it purported to be upon that hypothesis, I am of opinion, that he has brought himself within the proviso. The first part, the enacting part, applies to the sale of poisons, and amongst the enumerated poisons is prussic acid. I observe, that all of them seem to allude to poisons as being sold in their simple state, or in one form of preparation. It does not appear to contemplate in any of them their being mixed up with any other ingredients; it must be pure and simple. Then comes the proviso. Taking the general sweeping words of the enactment, they would have prohibited any medical man perhaps dispensing a prescription that contained a poison. It was supposed that might be so, in all probability; and then comes the proviso, which says, that nothing in the Act contained shall "apply to any medicine supplied by a legally qualified apothecary to his patient, nor apply to any article when forming part of the ingredients of any medicine dispensed by a person registered under this Act." Is this a medicine? That is not disputed. The word "medicine" is comprehensive enough to embrace everything which is to be applied medicinally, whether externally or internally. According to the prescription, this was intended to be used as a lotion, and the case stands as a fact, that the prescription was one which might be proper for a lotion. The proviso seems to put upon the same footing, in this respect, a duly qualified medical man, supplying this thing to his patient, and a registered Chemist and Druggist dispensing such a thing. If a duly qualified medical man had actually supplied, delivered himself, to his patient this compound of prussic acid and rose-water as a lotion, then he would be protected under the first part of that proviso. That being so, I think, the same rules apply to a registered Chemist and Druggist making up that compound from a prescription, which, as I understand, is the principle involved,—the making up something that is prescribed, and making it with directions how it is to be used. Then, did this prussic acid form part of the ingredients of a medicine dispensed by a duly registered person? It struck me, on first reading it, that the word applied only to cases where the poisonous article is one of several ingredients, where perhaps its poisonous qualities are qualified in a more or less degree by the other ingredients; but then, I think, it would be very difficult to apply the Act by that interpretation of it. We cannot enter into the consideration whether the other ingredients are fewer or greater in number, or in what proportion they may be. This is of itself a compound, and is a medicine which might have been ordered by a medical man to be used as a lotion. Then, has he complied with the remaining part of the section, which requires that the medicine "should be labelled in the manner aforesaid," by which I understand, distinctly and legibly with the name and address of the seller, as stated in the section; and that the ingredients thereof be entered, with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose? It is found that the ingredients were entered in what he called his prescription-book, which, I think, satisfies the requirements of the Act, as a book kept for that purpose, a book kept for entering such medicines or prescriptions. Then he has entered, as the person to whom it was sold, Mrs. Newton. The statute, by saying the name of the person to whom it was sold, or for whom it was delivered, has, I think, meant to give him the option of putting down the name of the person to whom he actually gave it over the counter, or the name of the person whose agent that person was for whose use it was intended. Taking the fact to be found, that he reasonably believed that this was duly prescribed for Mrs. Newton, Mrs. Newton must be taken to be the person to whom he sold it, and, therefore, he complied with the provisions of the Act. For these reasons, I think, the conviction is wrong.

Mr. Justice Hannen.—I am of the same opinion. I think we are able to pronounce our judgment upon the assumption which has been made, that it is to be taken that the magistrates would have found that the chemist in this case acted *bonâ fide*, believing that Mrs. Newton was the person to whom the medicine was sold. Without that, I should have thought it necessary that there should be a further inquiry, but upon that assumption I think we should be putting a construction upon the Act which will not lead to the dangerous consequences which Mr. Lumley Smith has suggested, because it will only be where a chemist establishes that he has entered the name of the person to whom he delivers it, or to the person to whom it shall be found he has reasonably believed he had sold it, that he brings himself within the terms of this proviso.

Mr. Lumley Smith.—In this case I should submit, this being brought before the Court on public grounds, that it is not a case for costs.

Mr. Quain.—I do not ask for costs, my lords.

BOOKS RECEIVED.

NOTES FOR STUDENTS IN CHEMISTRY; being a Syllabus of Chemistry and Practical Chemistry compiled from the Manuals of Gmelin, Miller, Fownes, Berselius, Naquet, Gerhardt, Gomp-Besanez, etc. By ALBERT J. BERNAYS, Ph.D., etc. Fifth Edition. London: John Churchill and Sons. 1870.

MAP OF THE GEOGRAPHICAL DISTRIBUTION OF THE MEDICINAL SUBSTANCES CONTAINED IN THE BRITISH PHARMACOPŒIA OF 1867. By a Lecturer on Materia Medica.

A MANUAL OF QUALITATIVE ANALYSIS. By ROBERT GALLOWAY, F.C.S., etc. Fifth Edition. Rewritten and enlarged. With Plate and other Illustrations. London: John Churchill and Sons. 8vo, pp. 415. 1870.

THE FOOD JOURNAL; a Review of Social and Sanitary Economy, and Monthly Record of Food and Public Health. No. 1, Vol. I. London, February 3, 1870: J. M. Johnson and Son, 3, Castle Street, Holborn.

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the EDITOR, 17, *Bloomsbury Square, as early in the month as possible, and in no case later than the 20th of the month, if intended for publication in the next number.*

Several communications have been received too late for publication this month, and some are postponed on account of press of matter.

MEDICINE STAMP AND LICENCE.

Dear Sir,—I was greatly surprised to find that some members of the Council of the Pharmaceutical Society were disposed to abolish the licence for selling patent medicines; a good reason for so doing cannot, I think, be advanced; there are many why it should be retained and even increased. I quite concur in the remarks made by your correspondent from Barnstaple, and think if the licence were abolished, every country shopkeeper or hawker would begin to sell all kinds of medicines, and accept almost any price for them. If the London trade feel the £2 licence to be a burden, by all means let them abandon the sale of patent medicines; but why try and involve the whole of the trade throughout the country in this retrograde policy, and fling open to all the retailing of proprietary medicines, including some of a poisonous kind, without any bar or restriction? By all means, as your correspondent suggests, equalize the licence,—make it 10*s*. *or* 20*s*., if you will, but do not interfere with a profitable branch of hundreds of country businesses. It would be well for the members of the Council to get thoroughly acquainted with the nature and requirements of a country trade, before they attempt to legislate for their mere unfortunate brethren, whose lot is cast in small towns in the midland counties of England. I always thought it was the desire of the Council to elevate, if possible, by sound and judicious enactments, the condition of the trade throughout the kingdom; but if they attempt to weaken the walls of commerce, and foolishly imagine that what will do for London must do for the kingdom, they will bring about their ears a nest of hornets, or raise an opposition which may shake to its foundation the fair fabric of Pharmacy as now existing at Bloomsbury.

It is to be hoped we have heard the last of the patent medicine question, unless it be to lift it high and dry above the reach of all, except registered Chemists and Druggists, or raise the licence to 10*s*. for town and country. Apologizing for thus troubling you,

I am, dear Sir, yours, etc.,
G. W.

Sleaford, February 20th, 1870.

Sir,—I had not intended writing upon the stamp and licence question, from the feeling that I did not understand the merits of the case to my own satisfaction; but, after reading the correspondence which you have published upon the subject, I have concluded that, imperfect as is my own comprehension of the question, I may yet draw attention to some points which, if I cannot do aught to elucidate, I may at least make the extent and the evil of their obscurity more conspicuous.

In looking over the exemptions from the duty, I do not see anything which clearly exempts a cough mixture from duty, whether that mixture be the nostrum of the maker or dispensed from the prescription of a medical man—if it be directed "A tablespoonful to be taken when the cough is troublesome." The exemptions, as quoted in the December Journal, page 317, show that mixtures are exempt if they have not a written label by which they are recommended for the relief of any ailment.[*] So by implication, it may be concluded that their having such a label renders them liable to the duty. My conviction is, that in such cases and many others, we are allowed to escape by sufferance, and at any time the law might be turned against us.

On the other hand, the Pharmacy Act, clause 16, reserves to all makers of patent medicines the right to make and vend the same, no matter what the composition may be, so long as the stamp and licence regulations be complied with; thus, Mr. Smith may make "Smith's laudanum," equal to B. P. tincture of opium, and sell the same stamped, though he possess no educational qualifications; and, if it suits his fancy or his pocket, he may make "Smith's Aconite Liniment," or "Strychnine Drops," with like freedom, and not be required to label them poison; the three-halfpenny stamp being capable of covering a multitude of sins.

If I be correct in these two interpretations, I think it cannot be questioned that the patent medicine laws require either total abolition or very considerable amendment. If, after having endeavoured to understand the law upon these two points, I have failed to do so, this of itself is evidence that the law is not such as it is desirable to perpetuate.

While the plea of ignorance will not protect us, the law ought to be so constructed that those who are under its daily operation should not find it impossible to understand its requirements.

So much for the necessity of some change, now for a word or two on either of the two propositions.

Suppose the law to be consolidated and rendered intelligible, and yet the stamp required upon medicines which were labelled with instructions for use in the alleviation of any complaint, I think the stamp should be *reduced* instead of increased, as some have suggested.

At present the duty is systematically evaded, because it is inconvenient and burdensome. I do not mean that there is a systematic breach of the law, but the duty is *legally evaded* by the omission of such directions as would render the medicines liable, the freedom from liability to the stamp being felt of greater moment than the convenience and safety of the patient. A law can only be considered to work well when there ceases to be a great and constant temptation to honest men to evade it. One of the greatest objections to the present arrangement is, that a medicine which is supplied with full directions regarding its use and properties,—which is always desirable in the introduction of new remedies or new preparations of old remedies,—requires to be stamped, and forthwith it becomes illegal for ever after to sell the same without a stamp, whether the instructions for its use in various maladies be continued or not. The introducer has, therefore, to choose between the omission of instructions which are in all respects desirable, or the making of his article into what is called a "quack medicine." If the stamp is to be continued, I think a reduction in its value to one penny in the shilling, and halfpenny stamps for smaller quantities, would do much to remove the burdensomeness of the impost, and not improbably produce a revenue equal to the present.

Supposing the patent medicine laws to be abolished altogether, then arises the question, how is the sale of secret and proprietary medicines to be regulated? Is that to be abolished also? If secret medicines are not to be abolished, will their sale be confined to the registered Chemist, and will he be responsible for the poison-label appearing on all such as contain any of the scheduled drugs? To confine the sale to registered Chemists, without making them in any way responsible for the contents or effects of the remedies so sold, appears to me to be seeking advantages under false pretences.

I should think it derogatory to our Society to aim at such a change, as I regard it a disgrace to our officials that vermin killers are placed in the second part of the schedule of poisons without regard to their composition.

If strychnine is to be sold for vermin killing, I do not know any principle of justice or of safety in allowing it to be sold to any stranger and without registration, on condition of its true name and nature being hidden under the words "Vermin Killer;" nor do I believe that the killers being placed upon this part of the schedule, will afford protection to any one who may be unfortunate enough to supply such, supposing an accident to occur, and it were proved that he had sold strychnine without registration and without its being labelled as such.

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[*] See the last eight lines of the concluding paragraph of exemptions.

I know of nothing more likely to bring our Society into public disgrace and distrust, than this disposition to retain the profit on the sale of these dangerous poisons, while we shirk the trouble of registration, and do not afford the public that protection which the Act was intended to provide.

BARNARD PROCTOR.

Grey Street, Newcastle, Feb. 1870.

Sir,—I think that if those members of our trade who hold such a position that the sale of patent medicines is almost distasteful to them were but placed as nineteen out of twenty of their less-favoured brethren are, they would hesitate before wishing the patent medicine licence abolished. As soon as that is done, stationers, grocers, etc., will sell all the leading medicines—Steedman's, Parr's, Cockle's, etc.—at prices leaving a merely nominal profit. Now the cost of the licence has a deterrent effect. If those who wish to legislate for us were to get the opinion of the trade, they would find that an immense majority would be in favour of leaving matters *in statu quo*, or, at most, of doing no more than equalizing the licence. The abolishment of it will remove a share of our already small profits,—a share obtained without much trouble or risk. I propose that the opinion of the trade generally be obtained, and that steps be taken harmonizing with the views of the majority.

I am, Sir, yours truly,
W. P. PARRY.

148, *King Street, Hammersmith.*
February 16th, 1870.

Sir,—As discussion of the patent medicine licence, etc., has been invited, I venture to suggest a thought or two on the vexed question.

First.—It appears to me that the present regulations are unjust to the consumer. *He* pays the sum of three-halfpence on the shilling, and for what? For being (in many cases) deceived. And I submit that the Government and the proprietor are equally in fault in the majority of such cases.

It is well known that the greatest consumers of patent medicines are uneducated people, who really think that the word patent implies, in the case of medicine, the same meaning that it does in the case of a machine, little thinking that anything or everything may be a patent (medicine) by putting on it a Government stamp; and all the protection the Government grant in return for the duty paid (not by the proprietor, but by the consumer) is, that the medicine may not be imitated (so far as forging the stamp goes).

Secondly.—The proprietors of patent medicines, in many cases, know nothing of the action of medicines (except their own, and that seldom by experience on their own bodies). Yet they are allowed to put up any preparation they like, poisonous or not, so long as they stamp it, which is really no cost to them in the long-run. And this, although an examined and certified chemist may not dispense a mild opiate ordered for a patient by an examined and certified physician, except under conditions carefully framed, considered, and enforced by Act of Parliament.

Thirdly.—The cost of a licence to sell these medicines is grossly ill-regulated. It is well known that many country booksellers, who pay the smallest price for a licence, sell many more than those chemists and dealers who have the fortune or misfortune to live in the City of London or Westminster, or in the limits of the twopenny post, who pay the highest.

I would suggest, then—

First.—If the stamp be not abolished, the Government ought, for the duty paid, to protect the consumer, by causing all secret medicines to be registered. By this, I do not mean that the recipes are to be given by the owners to the Government (which would be both unjust and impracticable), but that they should lodge a table of contents, or list of active ingredients, at the licence office, *not* to be published, but so that, in case of accidents, it might be referred to, to see if the medicines were really to blame or not. In many cases this would be a boon to the proprietors, for instance, when "Steedman's Powders" were blamed for poisoning a child, who was proved to have died from the effects of corrosive sublimate at the inquest.

Secondly.—If the vested interests were too strong for the registration to be established, would it not be better to abolish the stamp altogether, and, instead of it, charge the proprietors a manufacturer's licence, graduated according to the quantity made? Then the man who got *the* profits would pay something like his share to the Government, and a great deal of trouble and annoyance would be saved, as one payment would suffice for a whole year. With the stamp the name "patent" should also be abolished, and then the consumer would know that the medicine was not *patent* but *secret*, and if he chose to trust them he would do so at his own peril,—not paying for protection, he would have no right to expect it.

Thirdly.—The charge for a licence should be equalized all through the kingdom, and allowed to be held by anybody else who chose to pay the price.

I am, Sir, yours truly,
ALFRED UTLEY.
6, *Mount Vernon Road, Liverpool.*

Sir,—It appears to me not improbable that the Government, aware how unsatisfactory are the patent medicine laws, may ask us, before the introduction of the next budget, what the trade can propose to amend them, and I cannot discover, on reading the resolutions proposed or passed at their monthly meetings, that the Council is prepared fully to answer that question. Many sound suggestions on this subject have, in answer to your request, appeared in this Journal; my attempt will be, by supplying a connecting link so to group them as to present what may be accepted by every *interest* in the patent medicine trade and by the guardians of the public *interests* as a safe and comprehensive scheme.

The Government, we may assume, is prepared to sever itself from any connection with secret medicines, so far as appearing by that title of patent, to lend them either its authority or sanction. Willingly would it leave to the Dr. Bosches of the future the credit together with the business, of selling "The Vitalising Nectar," minus the old flourishes, "By Royal Letters Patent. Observe! To prevent imposition, the *Honourable* Commissioners of Stamps have *ordered* the word 'Bosch' to be printed in sky-blue letters on the Government stamp," and that awful warning, "to imitate which is *felony*," etc. etc.

It is time, in this matter-of-fact age, to cease calling medicines patent (always a blundering misnomer), and to give the thing its proper name,—a proprietary medicine.

The equalization of the licence charge is generally agreed upon, but not its amount. I would fix it at £1, because this sum would leave the amount of revenue levied on proprietary medicines about the same as at present. The sum paid for licences would be increased, but in return we should propose to free certain articles from the stamp duty.

This may, at first sight, appear unfair to the retailer; it will be found a necessary forestep to a following proposition, and the scheme must be taken as a whole.

As many articles are now liable to stamp duty which, in reality, have no pretensions to the character of medicines, the Board of Inland Revenue has it in its power, for this reason among others, to confer an essential boon by consolidating the Acts now affecting proprietary articles, and defining distinctly what constitutes a medicine, and what is, on the other hand, a merchandise, for the lady at her toilette, or the cook in her kitchen. Such a line it would not be difficult to draw.

It appears to me that such packages as Rowland's Odonto, Kalydor; Godfrey's Extract of Elder Flowers; Du Barry's Food, etc., are as fairly the stock-in-trade of the perfumer and grocer as of the C. and D., and they come under the same regulations for sale as *patent medicines* solely through the operation of obscure and conflicting Acts of Parliament. The public is thus doubly inconvenienced, the facilities for the sale of such articles are lessened, and their price is enhanced to consumers.

Taking things as they are in the patent medicine trade, I would show the fullest regard to vested interests. All existing rights, both of manufacture and sale, by whomsoever at present possessed, should be amply and strictly reserved to their present holders, and those individual privileges I would formally secure to them by registration.

Having so far considered mainly the interests of the compounders, proprietors, and sellers of what now come under the designation of patent medicines, I would turn to the public, "though last, not least concerned."

The great importance of this subject to them, all who affect to advise or undertake to legislate upon it are bound to consider. *Our* interest in it is that of a pecuniary return and convenience in business; *theirs* may truly be called "vital." *We* sell these patent medicines, *they* take them. Common sense and consistency would lead us to extend the provisions of the Pharmacy Act to patent medicines so far as circumstances will permit.

The law, on the one hand, interposes its will to prevent mixtures of so many drugs and chemicals being issued to the public otherwise than surrounded by certain safeguards, on the other it sanctions the most reckless distribution of any compound—and many are villainous enough—which the fancy of the compounder may suggest, and that principally to the poorer and unwary portion of the community. The public would receive a great boon were it enacted that no secret medicine should be prepared or sold for general use unless prepared or sold by a person duly educated in therapeutics or materia medica, *i. e.* a duly qualified medical practitioner, or a registered chemist and druggist.

To carry out the above proposition, and also that consumers may know whose medicines they are *really* taking, I would exact that the name in full, style, and address of the proprietor and maker of any secret medicine be printed on every package, bottle, bill, pamphlet, or advertisement pertaining thereto. Whoever buys a box of Cockle's

Pills reads at once all these particulars. What better type have we of an efficient remedy honestly offered to the public? What better precedent on which to form a rule?

Let any one look into pamphlets so freely distributed, and especially to the youth of both sexes. He finds in them one theme, prurient, disgusting, and overwrought elaborations of a loathsome subject. Their aim is to alarm and decoy. These usually have no signature, and sometimes an assumed one. May not such a regulation quickly lessen this scandal on the healing art? May we not hope that we have taken the proper step to exterminate in due time so great a social evil?

I would condense the above remarks in the following resolutions:—

1. That patent medicines, *i. e.* medicines liable to a stamp duty, be styled "proprietary medicines."

2. That the Board of Inland Revenue be memorialised to consolidate and simplify all Acts now in force affecting patent medicines.

3. That a uniform licence of £1 be paid by all vendors of proprietary medicines.

4. That all existing rights, both of compounding and selling, be reserved to all compounders and sellers of patent medicines at the time of the passing of the Act, and that, for duly securing to them these rights, they be registered by a legally-appointed public body.

5. That after the passing of the Act no medicine liable to stamp duty be compounded for sale, or sold by any one not being a duly qualified medical practitioner or a registered chemist and druggist, or registered as per proposition 4.

6. That on each package, bottle, bill, pamphlet, or advertisement containing or pertaining to any secret or proprietary medicine the name, description, and address of the proprietor, and compounder or maker, be printed in conspicuous type.

I remain, truly yours,
S. C. Betty.

The Poison Question.

Gentlemen,—I shall be glad if you will afford me a little space in the Pharmaceutical Journal for a few remarks on the proposed regulations for keeping and dispensing of poisons. But, before considering the proposals of the Council, I may mention that, I think, they might, with advantage to the public and with little inconvenience to the vendor, have gone further in restricting the sale of tinct. cantharides, pure and simple. This preparation is frequently wanted for criminal purposes, and is undoubtedly sometimes sold to such purchasers. Now the labelling it with the word "poison" will not materially interfere with its being used for criminal purposes. I own it would be very inconvenient to have to comply with the regulations for poisons in the first part of the schedule, whenever it was required for a hair-wash, pomade, etc. The tincture, *pure* and *simple*, might be placed in the first part of the schedule, but in the second, or omitted altogether, when mixed with a certain quantity of essential or fixed oil or anything rendering it impossible to be administered secretly. The first proposition of the Council is, that each poison shall be kept in a bottle, box, vessel, or package distinctly labelled with the word "poison." Might not the so labelling of every bottle containing poison, cause unnecessary alarm to our customers when they see their medicines taken out of bottles labelled "poison." The plan I adopted a year ago was to label each bottle Part 1 or Part 2, according to the part of the schedule its contents were classed in. This I have found to work well, as it reminds the vendor that the article is poison, and, at the same time, he sees what regulations he must comply with in selling it.

It is next proposed that in the keeping of poisons, one or more of the following systems shall be used. That they shall be kept in a closet, drawer, or compartment by themselves, or, that by some peculiarity in the make of the bottle, it shall be distinguishable to the touch, or that the stoppers shall be tied over or otherwise secured, so as to make them different to the ordinary bottles.

It cannot be necessary that all poisons should be kept in a closet or compartment by themselves. If this part of the proposition is to be adopted at all, it will surely be sufficient if it applies to the poisons enumerated in the first part of the schedule. The last, relating to the dispensing and compounding of poisons, lotions, etc., will require to be fully considered before adopting any particular form of bottle. Surely it can never be seriously contemplated that all poisons, lotions, and liniments shall be put into distinctive bottles. It would make confusion worse confounded. What is meant by a poison is defined for us by law, and the list contains medicines constantly being used for internal as well as external use. If this regulation was enforced, we should in many instances send out a comparatively harmless liniment or lotion for external application, and some strong drops for internal use, in *similar* distinctive bottles. There would be no safety in this, and if it is thought advisable to make any regulation on the subject, rather than leave it to the judgment of the chemist, it will, I think, be more for the public safety if the line is drawn between medicines for external and internal use. It would be objectionable to have more kinds of distinctive bottles than one. The angular and fluted bottles are elegant safeguards, but they are not applicable to all cases. It must be borne in mind that the provincial druggist at least has frequently to make up a liniment or a lotion composed of a pennyworth of each of two or three ingredients, and he could not afford to exchange a clean distinctive bottle for a dirty greasy one; and to compel the poor to buy new ones would, in many cases, be a great hardship. The corrugated bottle seems best adapted for general application. If we want a neat bottle of this description for our shelves or for dispensing purposes, I have no doubt the manufacturer will soon produce one, and if we had an ordinary bottle brought to us for two or three pennyworth of liniment, we could easily convert this into a distinctive bottle of the corrugated class, by attaching a piece of ready-gummed glass-paper to it.

I remain, Gentlemen, yours truly,

RALPH ROBINSON.

Rochdale, February 16, 1870.

This long perplexing question is at length taking a tangible form. Our Council have determined to bring before the Society certain regulations proposed for the keeping of poisons, and dispensing of external remedies. We all know that this question is not a new one, but has for many years been discussed in the journals, and at one time occupied the attention of the Council as such an important one, that a committee was formed to elaborate some plan to be recommended to the trade for general adoption. Many of us looked forward hopefully for the report of the committee, expecting some suggestions which would conduce to the safety of the patient and comfort of the dispenser. In this we were disappointed, for they told us, after great consideration, that they could not help us.

It would be interesting to have a verbatim report of all that passed in this committee. We could then probably see the cause of failure. It cannot be doubted that some schemes were proposed and discussed. It is probable that each member would have a scheme of his own, and, if he had, the probability is he could not find sufficient support for its adoption, while each could find sufficient support to negative the other schemes. Be this so or not, it is very much to be regretted that some system was not agreed to and recommended to the trade, for at that time a plan was urgently needed. However, few members of the trade were like this committee, for each took measures to procure for himself that which he had waited for from the committee, and at this time it would be an arduous task to find a pharmacy without a plan of safety. After the lapse of several years the Council have obtained a kind of power to prescribe certain means to be followed for the storing and dispensing of dangerous drugs. The Government, in giving this power, gave it under the impression that the means prescribed would be more efficient than had hitherto been followed. We are now able to form an opinion whether the means recommended will conduce to this extra safety or not, and can judge to a certain extent whether the safety of the patient or the convenience of the trade has been most considered. "Three distinct and simple methods known to be in common use" are recommended, not because they are all of equal merit, but because "it may *suit* A. to keep all poisons in a compartment where no other medicines are stored. It may be more convenient for B. to keep them intermixed with other articles. On the other hand, C. may feel both these systems irksome or unsuited to his case."

The three systems vary so much that they cannot be equally good; therefore the Council, which is entrusted with the power of prescription in behalf of the public as well as the trade, ought to have selected from the three the one which it thought would give the greatest security, and prescribed it to be adopted by the trade. If this had been done we must, at any rate, have given the Council credit of giving us that plan which it thought the best. We all know how much trade jealousy exists, and the chagrin which some would have felt in changing from the plan in use to the plan recommended, as it would seem to them that they were followers of their neighbours, and an admission that their plan was not the best. I wonder how much this feeling in the Council contributed to the recommendation of the "three systems in common use." For my part, I cannot see those "ever-varying circumstances" which would "break down" a fixed rule to be observed by all chemists in storing poisons. They are all theoretical, unsupported by facts. The poisons are the same in every establishment, and it would be quite as easy for each to keep them in some place set apart as to put them into distinctive bottles, and the converse.

On two previous occasions I have suggested a posological arrangement as the best, and if it were not virtually admitted to be so in the leader on the subject, I should not have had the temerity to mention it again, lest it should be branded as one of those "cunningly devised theoretical schemes put down in black and white for the first time." The writer recommends that the poison should be "put in distinctive bottles or vessels; not all in bottles of one shape or form, which would, to some extent, be mischievous, as there is as much danger in mistaking strychnine for morphine as in using morphine instead of some other less dangerous poison."

This argument applies to every article in the materia medica possessing poisoning power in an overdose, consequently the further the classing of poisons according to their potency can be carried out, the greater the safety ensured. I am sanguine enough to think that the whole pharmacy might be reduced to the plan, and, by the aid of bottles of different sizes and shapes, very great security might be obtained. In the fitting up of new places it would be attended by very little trouble; at any rate, it cannot be doubted that the very potent poisons might be classified a little more than appears to be recommended with advantage and little trouble. On the whole, I am pleased that the thin edge of the wedge is inserted in this matter, but it would have afforded me greater pleasure had those whom we look upon as our leaders in all which concerns our business been seen in the van of progress rather than dragging themselves along in the rear in this matter. That it will be accepted *nem. con.* at the general meeting cannot admit of doubt, for it will leave every chemist in the enjoyment of his own arrangement, put him to no trouble, and flatter his vanity.

Yours truly,
W. King.

Huddersfield, January, 1870.

Sir,—The discussion going on in the Journal on this important subject will, I trust, terminate satisfactorily to all; and, I think, the Council have acted wisely in inviting full and frank expression of individual opinion. It is of course easier to criticize a measure than to frame one; and it is certainly but fair, if a member indulge in the one, he should suggest something towards modifying or improving the other.

I hope the public outside will not draw the mischievous inference, that our present solicitude about the storage and sale of poisons has arisen from previous carelessness or faulty arrangements. Such an inference would be utterly groundless, for I question if there be any class dependent on the public, who take more trouble to secure the safety and comfort of their customers, than we find it our interest and duty to take.

The publicity given to cases of poisoning is very apt to raise the suspicion that these occurrences are rather common, and that the person supplying the poison is in some respects to blame; and when a chemist has the misfortune to make a mistake, there is a fear created that every person requiring a dose runs the risk of his life.

It is manifestly unjust that a chemist who disp ses a liniment and a mixture for the same person, using every possible precaution that the character of each is clearly indicated, should in the slightest degree suffer for the carelessness of the patient who swallows the liniment and rubs himself with the mixture; or be blamed for the muddled stupidity of the nurse, who may, like the well-known Mrs. Gamp, have a weakness for gin-and-water. To prove that mistakes by chemists are not common, I have looked over the Pharmaceutical Journal for the last ten years, and find recorded 301 *fatal* cases of poisoning during that period—160 of which were *accidental;* 84 were *suicidal;* 31 were *homicidal;* and 26 traceable to the mistake or carelessness of the vendors of medicines. Among these twenty-six, I question if there were *six* members of the Society.

In devising means for the proper dispensing of poisons I think this object should be kept in view, viz. to *interpose some obstacle between the dispenser and the poisonous ingredient he requires.* For this reason, that in the event of his mind being preoccupied or his attention from whatever cause distracted, he may be aroused and prevented from doing anything *mechanically.* I have already suggested in the Journal, for that purpose, the putting bottles containing the more potent poisons in cases. I am not, however, prepared to recommend that *all* the bottles containing poison should be so encased and separated. I would confine that distinction exclusively to such medicines as strychnine, prussic acid, the salts of morphia, and such like, which are now so frequently used in ordinary dispensing. As few retail chemists rise to the sublimity of having "a couple of chests of opium and fifteen gallons of laudanum" in their stock, I would leave such bulky and precious articles to take care of themselves. I confess I have not much faith in singularly-shaped bottles, for I fear the use of them might induce that habit of mechanical dispensing which I would dread. I have adopted a simple plan to distinguish bottles containing poisonous articles. It is a cross made of two slips of red capping-paper, pasted immediately below the label. It readily catches the eye, and can also be felt. Those who have noticed the distinction highly approve of the idea. If some such simple expedient is not generally satisfactory, I would suggest to the Council not to prescribe any particular mode, but simply to order that all bottles, etc., containing poisons should be distinguished from all other bottles, etc., leaving the mode to be determined by individual experience and convenience. Of course it would be better to have one uniform system, but unless it be simple, inexpensive, and applicable to any kind of shop, I fear it would be needless to attempt it.

In selling poisons I would have the name printed on *red paper*, with the word "poison," of course. This colour is familiar to the public as an emblem of danger; and I have no doubt if we all used it to distinguish things *not to be taken*, every one would soon be *educated* to understand its significance. The fact that different colours —not different shapes—are used to distinguish the various priced letter-stamps, proves such a mode of distinguishing is now pretty well understood, I shall conclude by expressing a wish to see an *esprit de corps* cultivated amongst us, so that when any doubt is cast on our accuracy or carefulness, each would feel the imputation as acutely as a soldier would any unfavourable reflection cast on the courage of his regiment.

I am Sir, your obedient servant,
George Burrell.
Montrose, February 9th, 1870.

Sir,—At a time when the Council of the Pharmaceutical Society exercises so much influence over legislation, it may not be inopportune to note how inadequately country districts are represented in the Council. It would seem as reasonable that Members of Parliament for London and the Universities should legislate for the whole country, as that the pharmaceutical interests of the country population generally should be committed to chemists in London and the large towns exclusively.

It might be an advantage if some such relationship could be established between Members of the Council and their supporters, as subsists between Members of Parliament and their constituents. We should then have a direct means of communication with the Council, instead of endeavouring to reach their ears in the best way we can.

Whatever benefits result to certain chemists from the Pharmacy Act, we, in the country—where trades are so mixed, and where we depend so much upon retailing drugs, etc.—can reap little advantage from it. If we restrain the grocer and the huckster from selling half-a-dozen poisons in occasional demand, they will retaliate by selling a dozen other things of constant necessity; so that borax at a shilling per pound may be but a type of the "improved prices" we shall obtain under the operation of the Act. The inhabitants, too, of the country proper may suffer needless inconvenience from additions to the schedule of poisons. Hodges, the ploughman, sends his children to the village school, where, besides the intellectual life developed within the head, considerable animal life is often communicated to the exterior, for which "a pennyworth of white precipitate" is the time-honoured remedy. But he lives six or seven miles from a town, and poisons are not sold in his village. The obstacles in the way of supplying his need from so great a distance, practically extend to the third plague of Egypt the same protection which is afforded to small birds; and Hodges wonders why an article labelled "poison," from the shop of "John Smith, shopkeeper, Littleton," is more dangerous than if it bore the address "John Smith, Chemist, Bigton"? "Salus populi suprema lex;" but "salus" is both "health" and "safety;" and the latter meaning may override the former:

> "Incidit in Scyllam cupiens vitare
> Charybdim."

The security of the word "poison" is too frequently merely apparent. Like the caution-board at the ford which warned persons not to attempt the passage when the water covered it; the label is often present when unnecessary, but absent when needed, especially in the case of dry poisons. The blacksmith buys prussiate of potash, so dangerous to children from its attractive appearance; he uses a small quantity, but does not restore the remainder to the original wrapper, or if he does, the label is so begrimed as to be illegible. But, perhaps, the doubtful destiny of a poison-label is not so great an evil as the uncertainty attached to its use. Am I to label an opium plaster, ung. gallæ co., and syr. rhœados "poison"? Or must I either affix this label to a pennyworth of cough pills (supposing them to be "pil. ipecac. c. scilla"), or a single Dover's powder, or else enter such items in a prescription book? What must I do if, at market-time or on a Saturday night, a customer wants a pennyworth each of paregoric and syrup of squills, or a pennyworth of laudanum in a winebottleful of vinegar and treacle? shall I label them "poison," with a verbal instruction to remove the label as soon as he gets outside? "Use your common sense." But what has that to do with the Act? "All preparations of opium and poppies," are "poisons," and the Pharmacopœia appends an authoritative list of "preparations" to "opium." Moreover, my common sense might be of some use, did not the phantom of "justices' justice" and the recollection of recent magisterial decisions haunt my imagination and pervert my judgment.

Every chemist must have a great many anonymous prescriptions containing poisons. Why should not the physician be compelled to add the name and address of the patient, leaving chemists to deal with family recipes and published formulæ? It must seem impertinent to a customer that a chemist should require more information than the physician who accepts the responsibility of the case; and explanations of the law may alarm a patient rendered unduly sensitive by disease.

While writing on poisons, one can scarcely forbear a passing remark upon the tone of the comments which frequently follow a mistake by any unfortunate chemist. Correspondents rush to the front with condemnations, suggesting possibly their own perfect arrangements which render such accidents impossible, but ignoring the common liability to momentary aberration, which may set at nought all precautions. Pliny truly says, "Nemo mortalium omnibus horis sapit." It might be more manly and more useful to utter a word of sympathy and kindly regret, remembering the moral of the verse—

> "Id commune malum; semel insanivimus omnes;
> Aut sumus, aut fuimus, vel possumus omne quod hic est."

I am, Sir, yours truly,
HENRY H. POLLARD.
Ryde, February 16th, 1870.

Sir,—Mr. Wilkinson has, in his letter of last month, so well discussed one branch of the question raised by the proposed poison regulations as to leave little room for further comment; but I ask your permission to say a few words on another part of the same subject.

Assuming, for the moment, that those regulations are in themselves desirable, in short, that nothing but the will is wanting to carry them out in their integrity, has it been sufficiently considered how they are to be enforced? To do so effectually will, of necessity, give rise to an inquisitorial system. The Council must appoint a staff of inspectors, who will roam up and down the country, looking in upon us like excisemen at unexpected moments, and prying, as of right, into the internal arrangements of our shops; or, failing this, for I suppose it has no such power, it must await the result of a coroner's inquest or magisterial inquiry. To intervene, then, is to lay an additional burden on the shoulders of a man already smarting, it may be sinking, under a punishment which the public has in its own power, and which it never fails to inflict, after the disclosure of a serious mishap. That punishment is, at lightest, the partial ruin of a business,—it may be starvation and the workhouse. No *legal* penalty can be so severe, its infliction so inevitable; yet the Council imagines that the fear of such a penalty will suffice to transform the minds and habits of men, unaffected by the thought that their daily bread may depend on their care and circumspection. Will not these regulations, therefore, be worse than futile? Useless against the majority, which already, in great part, conforms to them, they will exert no preventive action on the minority which does not, but only supplies the means of further and, under the circumstances, oppressive punishment.

Continental chemists congratulate us enviously on our freedom; but the paternal governments which hold them in leading-strings at least grant a monopoly, and restrain excessive competition. In this country there can be no such compensation. Why, then, should we voluntarily surround ourselves with the irritating restrictions from which they would so glady escape?

The Council may have lost faith in the power of education and increasing intelligence. I trust and believe its constituency will be found more steadfast, and will hesitate long before giving its sanction to what can only be regarded as the commencement of a retrograde policy.

CHARLES EVE.
Hampstead, February, 1870.

Dear Sir,—I was not so much surprised at the questions asked by a correspondent in the January number of the Transactions as I was by the answer given in the number for this month by Mr. G. Brown. A young student may have passed most creditably through his examination, and yet be ignorant of many usages of the trade, and also unacquainted with many old names of drugs and chemicals which still prevail in the provinces. It is needful to be acquainted with the earlier processes of some chemical manufactures to comprehend the real significance of such commonly used terms as "spirit of sal-ammoniac, spirit of salt, spirit of nitre, oil of vitriol," and many other such. If properly informed, no member of the trade would use sulphuret of antimony when cinnabar is ordered. The latter name is only properly applied to an ore of mercury; when made artificially it is called factitious cinnabar; when made from the residue after distilling butter of antimony (the old process to which you refer) it was called cinnabar of antimony; but in either case it is a union of sulphur with *mercury*, not antimony. Some years ago I elicited from the late Jacob Bell a confirmation of these views.

I remain,
Your obedient servant,
GEO. COCKING.
Ludlow, February 7th, 1870.

CHLORODYNE—ITS COMPOSITION.

Sir,—Will you kindly permit a few more words as to the Composition of Chlorodyne, in reply to my anonymous friend, a "*Pro-*

vincial." He speaks of the laxity of medical men in going on in prescribing a nostrum with blind faith in its occult powers, and without caring to ascertain what it is they are giving their patients; then of the anarchy that exists in the multifarious compounds under this name administered to the sick: one containing obviously prussic acid, another five times as much morphia as a third with no prussic acid, but belladonna and Indian hemp and chloroform.

I hold that the question of chlorodyne is the question of all secret nostrums. I have for years protested against the secret formulæ of chlorodyne, but the medical journals, having a direct interest in advertising it, would not insert my notes. The "Provincial" thinks there is a contradiction in the following phrases:—I have "tried all three specimens pretty extensively" (Brown's, Towle's, and Freeman's), "but the profession, if guided honestly, should discountenance secret formulæ." One has no time to make a chlorodyne for himself. I find it in almost all families; nor do I believe Piccadilly is in Ireland, as he declares. In fact, I have tried the two forms of chlorodyne, the formulæ of which are published (Towle's and Freeman's), and have discountenanced the one with a secret formula, though advertised and recommended by medical editors.

Chloroform and chlorodyne, I regret to say, are mere trade or party questions in journals. Nitrous oxide also begins to be a most valuable agent for removing pain; only one side is heard; but nitrous oxide was peremptorily condemned at once in favour of bichloride of methylene and ether spray, and so the occult powers of that chlorodyne which was advertised most were held in favour. It is a fight like that of Hercules, I know, in the stable of classic note, to clear away the corruptions of party or trade questions. I would only hope that when I said if the profession were guided honestly, it should discountenance secret formulæ, I used no contradiction in terms. The 'Pharmaceutical Journal' is doing immense good in striving to elucidate the fount of the real composition of these heterogeneous compounds. I think the bedside test of what chlorodyne accomplishes for the sick is of quite as great value as eager laboratory speculations, not overwise, that chlorodyne is nothing but treacle and a solution of morphia; or, again, treacle and belladonna. We want, in fact, one steady recognized formula like Towle's. It is only very shallow practitioners that cannot see the vast difference, especially in such affections as dysmenorrhœa spasm, between such a compound and a simple solution of morphia; or, again, between Freeman's formula and treacle-and-belladonna. Some patients are intensely sensitive to one or other of these active agents, and thus come to be a sort of measure or test of that special formula. I know one lady who is made ten times worse of her ailments by Brown's chlorodyne, but one of the other two invariably acts like a charm in curing her.

I am, etc.,
CHARLES KIDD, M.D.
Sackville Street, Piccadilly.
February 6th, 1870.

R. G. E.—(1.) Yes. (2.) No; only those who have passed the "Major Examination."

W. F. J. (Clerkenwell).—*Benzole in Dispensing.* A licence, which may be obtained without any cost from the Board of Works, would remove the difficulty complained of.

A. P. S. (St. Austell).—Messrs. Jackson and Townson, 87, Bishopsgate Street, Within.

F. G. (Louth).—A knowledge of both systems is expected.

P. D.—We presume the intention of the prescriber is that the chlorine should be retained, and therefore the hydrochloric acid should be added last.

N. M. (Haddenham), "*Inquirer*" (Leeds), and *J. Worrel*, should forward particulars of the cases mentioned to the Registrar, 17, Bloomsbury Square.

H. M. D. (Cardigan) wishes to have a formula for "*Inseparable* Lime Juice and Glycerine."

"*Preliminary.*"—No; the information will be found on the cover of the Journal.

W. L. G. (St. Austell).—The "Major Examination" is now necessary.

W. L. (Bristol).—Included in the second part of the schedule: see page 442 of our last number.

R. H.—See page 442, as above.

"*Solicitus*" (Bracknell).—No.

F. O. C. (Chard).—Yes; if it gives off inflammable vapour at less than 100° Fahr.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to ELIAS BREMRIDGE, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. CHURCHILL, New Burlington Street, London, W.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. X.—APRIL, 1870.

THE REGISTERS OF PHARMACEUTICAL CHEMISTS, AND CHEMISTS AND DRUGGISTS, AND THE CALENDAR OF THE PHARMACEUTICAL SOCIETY.

Had any of the zealous promoters of the measures which were initiated in 1841, for the purpose of advancing chemistry and pharmacy, of establishing a uniform system of pharmaceutical education, and protecting the interests of chemists and druggists, ventured to predict that within thirty years from that time there would be published two such works as those now before us, it would have been received as an indication of the influence which imagination may exert over sober judgment. In fact, these books are the best possible evidence of the realization of all, and more than all, that was ever predicted by the most enthusiastic of the pioneers in the cause of pharmaceutical regeneration.

The book of registers is, of course, mainly, a mere collection of names and addresses, accompanied, however, by copies of the Act of Parliament under the authority of which the 'Registers' have been prepared, and of other Acts together with the Charter of Incorporation by which the Pharmaceutical Society has been established and vested with parliamentary authority. It is the second publication of the sort that has appeared, and, compared with its predecessor of last year, it is found to consist of 25 more pages, and to contain about 1100 new names. Nearly 100 names that were inserted in the previous registers have, however, been removed, so that the increase in the number of names is about 1000. Much of this increase has been caused by the registration of those who have passed the Modified examination, amounting to 716.

There are, as required by the Act of Parliament, two registers, one of pharmaceutical chemists, and the other of chemists and druggists, this latter list including all those whose names appear in the former, together with others who are not entitled to the higher designation. The general register now contains more than 12,500 names of persons who are legally entitled to assume the name of "chemist and druggist," and to sell or dispense poisons. Many of those whose names are on the 'Register,' however, are not established in business on their own account, and some of them probably are not at the present time engaged in the practice of pharmacy in any capacity.

In looking over the names and addresses, some of the latter appear to us very incomplete and insufficient for any practical purpose. For instance, Alfred Smith, London, or John Smith, Liverpool, seem very imperfect addresses, yet these occur, with many others of a similar description, in the list. The fault in these cases is undoubtedly not that of the 'Registrar,' but of the registered. In some cases it is probably unavoidable, as the parties may not have had any fixed residence at the time of registering, but it is very desirable to make the addresses available for reference to the individuals, whenever this can be done.

The 'Register' is probably, to some extent, incomplete also, from its having dead men's names in it, and addresses that are no longer those of the individuals to whose names they are appended. In these respects our members throughout the country, and especially our local secretaries, may render valuable service by giving information to the registrar, where errors are observed.

The 'Calendar' is in some respects a less pretentious work than the 'Registers,' but it contains a good deal of information on several important subjects. It not only represents the existing position of the Pharmaceutical Society, but shows how it has gradually attained to this position. Like the 'Registers,' this smaller work has been increased in thickness since the previous publication of it, being now 223 pages instead of 168 pages as formerly. We observe an alteration, which appears to us an improvement, in the arrangement of the names of members, town and country members being included in one list, instead of forming two separate lists.

APPOINTMENT OF LOCAL SECRETARIES.

There are so many subjects likely to occupy the attention of members of the Pharmaceutical Society, at and up to the time of the Anniversary Meeting in May, that some of them may possibly fail to receive a due share of consideration. We are therefore induced to offer a few remarks on one of these subjects, with the view of reminding members of a duty they have to perform with reference to it. The appointment of Local Secretaries is made annually by the Council, on the recommendation of the members residing in the districts to which the duties of the office relate. Every town returning a member to Parliament, or in which there are three or more members of the Society, is entitled to have one of the members placed in the position of Local Secretary. The office is honorary, and it has sometimes been looked upon more in the light of a complimentary distinction than a post of responsibility, involving a sacrifice of time and the exercise of some important qualifications. The Council, however, have repeatedly had occasion to acknowledge the great value of the services rendered to the Society by its Local Secretaries, and the position the Society has now assumed will render the necessity for such services more urgent, and the qualifications required for their efficient performance of a higher order than has hitherto been the case. It is to the Local Secretaries the Council must look for information and assistance, to enable them to carry into effect some of the provisions of the law, the execution of which has been intrusted to them by the legislature. Without this assistance it would be difficult if not impossible to enforce the requirements of the Act relating to the sale of poisons, and the practice of pharmacy. Their assistance is also required in conducting the preliminary examination of apprentices and students, in accordance with the recent regulations of the Board of Examiners. The following reference is appropriately made to these officers in the 'Calendar,' which has just been issued:—"The interests of the Pharmaceutical Society in the provinces is watched over by Local Secretaries, appointed by the Council on the recommendation of the members residing in the districts for which such Secretaries are to act; and these gentlemen are of great importance when it is necessary to obtain information, or rouse the whole body to action. Such occasions have occurred repeatedly. In 1862 a Bill was introduced into Parliament, for the purpose of amending the old Juries Act, and the united efforts of the Society obtained the exemption of pharmaceutical chemists from service on juries by an addition to that Bill.

"More recently we may point to the service of the Local Secretaries during the various Sessions of Parliament in which the 'Bills,' terminating in the Pharmacy Act of 1868, were under consideration."

What we wish to impress upon the notice of members is, that it is their duty to recommend to the Council, for appointment as Local Secretaries, such persons as they consider best qualified for it, by their positions, abilities, and willingness to devote the requisite time to the work of constantly watching over the interests of the Society. Without such recommendation, the Council cannot be supposed to be able to make a judicious selection, yet it frequently happens that the voting-papers for the election of members of Council are sent up unaccompanied by the separate paper which each member receives, and on which he is requested to write the name and address of the member he proposes for appointment as Local Secretary.

PHARMACEUTICAL EXAMINATIONS.—PRESCRIPTION DEPARTMENT.

So great has recently been the pressure on our Examinations, that the task of providing larger and increased facilities for both the Examiner and the Examined has become a matter not of sentiment but of necessity. Our present collection of autograph prescriptions amply supplied the demand formerly existing. The time has come not to alter but enlarge, and certain Members of Council, energetically aided by some London Pharmacists, and assisted by a few gentlemen in the country, have endeavoured to render the official formulæ in the Society's possession thoroughly effective for educational purposes; that they should satisfy the requirements of an examiner and form also a library of reference and instruction for the student.

The design speedily exceeded private enterprise. One hundred recipes, two hundred, and subsequently five hundred were arranged, but these proved insufficient. Though something has been done already, much more remains, for it is felt that we must not fall short of that position which, under the new Pharmacy Act, we enjoy.

It is the duty of every great Society to be the standard and centre of information with respect to the particular branch of science for the promotion of which it has been established. Prescriptions surely, as regards ourselves, come under this category. It is for us to teach as well as to examine. Therefore, as far as prescriptions are concerned, every variety should be offered; some that might easily be read across a hedge, others that might puzzle the most experienced dispenser.

If practicable (and we think it is), they should illustrate different districts, such as London, France, and our own provincial towns. Also, our collection should be a record (always necessarily imperfect) of dispensing pharmacy. This we cannot gain, but we may make considerable advance on existing circumstances, nor need we adopt the creed, that whatever is is best. It is proposed, firstly, to arrange and restore the Examination Books in hand; secondly, to add from 2000 to 3000 additional recipes.

Wonderful help has already been obtained, and all fear of failure has been removed. If the Members of the Pharmaceutical Society should be induced to lend their aid, and to strengthen the hands of those who have given themselves to this work, there will, ere long, be a collection of autograph prescriptions which they will be proud to own, and which the learner will thankfully consult.

Meanwhile we earnestly entreat the favourable consideration of the proposal which, in full detail, will be presented at our next evening meeting.

ARE CHEMISTS JUSTIFIED IN SELLING HOMŒOPATHIC MEDICINES?

The well-known name of Mr. R. W. Giles, of Clifton, must always draw special attention to any paper whereto it is appended, and our readers cannot fail to be interested in a letter from him, which appears in our correspondence of this month.

Were all pharmacists imbued with as sound an opinion on the one thing needful to raise pharmacy to a profession, as Mr. Giles is, so convinced of the error of expecting from without that which can only come from within, and of the damage done to every body corporate by the *lâches* of its members individually, the progress of advancement would be infinitely more rapid.

As to the homœopathic system of administering medicine, we feel as strongly as our correspondent that it is an utter absurdity, useful only where total abstinence from physic is required; we know, too, that a prescriber in ordering a globule containing the decillionth part of a grain of any given drug, to be divided into two doses, does not intend that it should be divided at all, but taken entire in powder No. 1, and that No. 2 shall be only sugar of milk given as a "*placebo*" to the patient; but if there be fraud in this system, it must surely be on the part of the physician, and we are not prepared, as Mr. Giles is, to declare the dispenser "*particeps criminis.*" It is the business of the pharmacist to dispense faithfully the prescription presented by his customer; when he presumes to pass judgment on the value of the medicine, as applied to the special disease for which it is prescribed, he steps beyond his province, and, pushing Mr. Giles's principle a little further, may sometimes be tempted to decline compounding the prescription as well of an allopath as a homœopath. Is it an abnegation of principle to divide bread crumb into pills, and direct one to be taken every six hours? Would the man who condescended to do this be, for that reason, fairly open to the suspicion of mixing slate with his scammony? We think not; and on this sweeping charge of fraud against all allopathic pharmacists who dispense homœopathic doses (and, by the way, are said to humbug *consenting* parties, therefore may contend that they are not humbugging at all), we must be allowed to differ from our able correspondent. But on this point only do we differ; we would gladly see the two systems of pharmacy kept in separate hands, as the two systems of prescribing are usually, but not always. We believe the physicians too would prefer sending patients to dispensaries purely allopathic or homœopathic. The allopath, because he would, like Mr. Giles, have a suspicion of the man who was "all things to all men;" the homœopath, because he professes to believe that the emanations from a multitude of drugs in their pure and simple form, will utterly destroy the power of his medicines in their infinitesimal attenuations!

GOVERNMENT AID FOR SCIENTIFIC EDUCATION AND RESEARCH.

We briefly alluded to this subject in our last number, and described the steps which had been taken with reference to it, at the instigation of the Council of the British Association. Since then, it has been noticed in the House of Commons, and Mr. W. E. Forster, Vice-President of the Committee of Council on Education, in reply to Mr. Samuelson, stated that Earl de Grey intended forthwith to advise her Majesty to issue a Royal Commission to inquire into the aid given from all sources to the different scientific societies, and to ascertain and report whether they considered that this aid could be given with better advantage. It appeared from Mr. Samuelson's statement, that the accommodation now provided for the School of Mines, the College of Chemistry, and the Geological Survey, is insufficient to meet their requirements, and that a proposition has been made to transfer the Jermyn Street and Oxford Street Schools to South Kensington. The whole subject will come under the consideration of the Commissioners, but until their report appears the existing arrangements will not be disturbed.

TRANSACTIONS

OF

THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *March 2nd*, 1870,

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

MR. HASELDEN, VICE-PRESIDENT.

Present—Messrs. Abraham, Bottle, Bourdas, Brady, Carteighe, Deane, Dymond, Edwards, Hills, Ince, Mackay, Morson, Orridge, Sandford, Savage, Squire, Stoddart, and Williams.

The minutes of the last meeting were read and confirmed.

The Report of the Finance and House Committee was presented, showing on the General Fund Account a balance in the Treasurer's hands of £937. 3*s*. 9*d*., and on the Benevolent Fund Account a balance, after purchase of £500 Stock as ordered by last meeting, of £172. 17*s*. 4*d*.; and submitting for payment accounts, and various items, amounting to £595. 14*s*. 10*d*.

Resolved—That the Report be received and adopted, and payments made.

The Financial Statement for the year 1869, and the Report of the Auditors having been read, it was moved by Mr. Hills, seconded by Mr. Squire, and

Resolved—That it be received and approved, and printed in the April number of the Journal.

Moved by Mr. Sandford, seconded by Mr. Orridge, and

Resolved—That the sum of Five Hundred Pounds be transferred from the General Fund of the Society to the Benevolent Fund.

The Report of the Library, Museum, and Laboratory Committee was read and received.

Resolved—That the Report of the Journal Publication Committee, recommending a weekly issue of the Society's Journal, be received and adopted.

Resolved—That the form in which the Journal shall be published, and other details, be referred to the Library, Museum, and Laboratory Committee, and that they be requested to report thereon at the next meeting of the Council.

Resolved—That the preparation of the Annual Report be referred to the Library, Museum, and Laboratory Committee; that when such Report shall have been approved by the Council, it be printed and issued with the Voting Papers for the Election of the Council and Auditors for the ensuing year.

Resolved—That the Annual General Meeting of the Society be held on Wednesday, the 18th May, at 12 o'clock precisely.

Resolved—That a Conversazione be held at the house of the Society on Tuesday evening, the 17th May, at the usual hour, and that ladies be invited to attend.

REPORTS OF BOARDS OF EXAMINERS.

February, 1870.

ENGLAND AND WALES.

Feb. 11,	Separate	Examination,	8	candidates	examined, 5	passed.
11,	Modified	,,	86	,,	,, 26	,,
25,	,,	,,	89	,,	,, 25	,,
16,	Major	,,	6	,,	,, 5	,,
,,	Minor,	,,	16	,,	,, 10	,,
		Total .	105		71	

Preliminary Examination, 11 certificates were received and approved.

SCOTLAND.

February 11th, 1870.

Minor Examination, 3 examined, 3 passed.
Modified „ 6 „ 5 „
Preliminary „ 8 „ 7 „
17 15

Resolved—That the following, being duly registered as Pharmaceutical Chemists, be severally granted a Diploma, stamped with the seal of the Society:—

Goulden, Henry James, Walworth.
Harvey, John William, Brighton.
Peck, Frederick Hamilton, Poole.
Robinson, John, Hexham.
Swain, William Thomas, Selby.

Resolved—That the following Pharmaceutical Chemists be elected Members, and that their Diplomas be stamped with the seal of the Society:—

Barnaby, Francis, Manchester.
Gething, William Burford, London.
Hill, John, Neath.
Hughes, Henry Martyn, Nottingham.
Reynolds, Freshfield, Leeds.
Southall, Alfred, Birmingham.
Terry, Thomas, Withington.

Resolved—That the following registered Chemists and Druggists be elected Members of the Society:—

Aitken, James, Edinburgh.
Arnold, James, Edenbridge.
Edisbury, James Fisher, Wrexham.
Gostling, George James, Stowmarket.
Hanbury, Cornelius, Plough Court, Lombard Street, London.
Hannay, Lyon W. Craig, Edinburgh.
Hayles, Alfred, Ealing.
Hayles, Benjamin Hone, Ealing.
Hayles, James, Ealing.
Hey, David, Hebden Bridge.
Huggins, John, Alresford.
Lea, John, Folkestone.
Leslie, Joseph Blackburn, Sheffield.
Nunn, Charles Grimwood, Hampton.
Pasmore, James Henry, 116, Tottenham Court Road, London.
Pridgeon, Walter John, Hawkhurst.
Price, J. Moore, Loughborough Pl., Brixton.
Rowling, Samuel, jun., Headingley.
Spurling, William, 8, Stanley Rd., Hackney.
Squince, John Abbot, Upper Norwood.
Steele, Edwin Breare, Leeds.
Turner, E. Anstee, 116, Balls Pond Road, London.
Vincent, Lacey Andrews, Watton.
Wilkinson, T., 270, Regent Street, London.
Woolrich, Charles Bromley, Nottingham.

Resolved—That the following, having passed their respective Examinations, be elected Associates of the Society:—

Blissett, William, Romsey.
Charlesworth, Charles E., Chorley.
Epps, Franklin, London.
Fisher, Richard, Preston.
Fowke, Robert Main, Worcester.
Gwatkin, James Ross, Brighton.
Hawkins, Thomas, London.
Herron, Archibald J., Margate.
Keen, Benjamin, Uppingham.
Lambert, William Rawlings, Brighton.
Masters, George Cheesman, Eastbourne.
Paterson, William, Oxford.
Phillips, Benjamin, London.
Pilley, Henry Thomas, Lincoln.
Radclyffe, Robert C. T. Birmingham.
Raffle, William, South Shields.
Robinson, James, London.
Rogers, Henry Frost, West Ham.
Scholefield, Herbert, Tue Brook.
Symington, Thomas, Edinburgh.
Walter, William, Northampton.
Walton, Jonathan Sparke, Haydon Bridge.
Warrington, John Charles, Derby.
Watmough, Henry, Hitchin.

Resolved—That the following, having passed their respective Examinations, be elected Associates in business:—

Cooper, William W., Stoke Newington.
Harley, Edward Thomas, Camden Town.
Miller, James, Manchester.
Payne, John Buxton, Castle Northwich.
Tilson, James, Tydd Gote.

The following communication from the Society's Solicitors was read, and ordered to be entered on the minutes:—

Elias Bremridge, Esq. 1, East India Avenue, E.C.
Dear Sir, *Feb.* 14, 1870.

Pharmaceutical Society v. *Marwood.**

On the hearing of this case on Friday, the judge (with evident reluctance) gave a verdict for the plaintiffs; and acting upon the authority given at our request, we informed the judge that we were authorized not to ask for costs, whereupon he said that he would not give costs in the case. We, however, might have rejoined that the Pharmacy Act was compulsory upon him to give the costs if required; and as to this, we point to clause 13 of the Pharmacy Act, 1852, as containing words as follows:—"In every such action or proceeding the party who shall prevail shall recover his full costs of suit or of such other proceedings."

We send herewith copy of the opinion of the Attorney-General and Mr. Edward Bullock, of the Norfolk Circuit, which was read by us in this case.

Berry v. *Henderson*, 1–2.*

The Court of Queen's Bench was to-day constituted of Mr. Justice Lush and Mr. Justice Hannen, before whom these appeals were fully argued with the result that Mr. Lush delivered a judgment expounding the law exactly as contended for by the Pharmaceutical Society, and that Mr. Justice Hannen concurred, so that both appeals were successful, and the convictions were quashed.

Seeing that the case resulted in a judicial and satisfactory exposition of the law, we, with your sanction, instructed counsel not to ask for costs against the respondent.

The Society v. *M'Call.**

We enclose a memorandum of the proceedings in the County Court in M'Call's case, in a shape which may be used as our Report to Council or otherwise, as you think best.

We are, dear Sir,
Yours truly,
Flux, Argles, and Rawlins.

EXAMINATIONS IN LONDON.

February 25*th*, 1870.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, Ince, and Southall.

MODIFIED EXAMINATION.

Thirty-nine Candidates presented themselves for examination; the following twenty-five passed, and were duly registered as

CHEMISTS AND DRUGGISTS.

Basker, John Perkin, Grantham.
Bathe, Robert Samuel, St. Alban's.
Charlesworth, Charles Edward, Chorley.
Collett, Charles Benjamin, London.
Collins, James, Leeds.
Cooper, Thomas, London.
Draper, Richard, Newark-on-Trent.
Edwards, James Joseph, Pontypool.
Edwards, Thomas Oliver, Newtown.
Evans, Joseph James, Kidderminster.
Glossop, George Edward, Bristol.
Goddard, Francis, Lambeth.
Highley, William, Todmorden.
Hughes, Thomas, Denbigh.
Huntley, Henry Edwin, London.
Key, Hobson, Beverley.
Learoyd, Edwardus Radley, Sheffield.
Nickols, Arthur, Crewkerne.
Oldham, James, London.
Powley, John Holliday, Liverpool.
Purnell, Henry Albert, Hereford.
Radclyffe, R. Caygill Tom, Birmingham.
Rainforth, Richard, Ripon.
Rogers, Henry Frost, West Ham.
Smith, Peter, Chesterfield.

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* See 'Pharmaceutical Journal and Transactions,' pp. 553–575.

March 16*th*, 1870.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Gale, Garle, Hanbury, Haselden, and Southall.

Twenty-seven candidates presented themselves for examination,—five Major and twenty-two Minor; the following passed, and were duly registered:—

MAJOR (as Pharmaceutical Chemists).

*Forster, Henry, Durham.
Darnill, Charles, London.

MINOR (as Chemists and Druggists).

*Lloyd, Edward, Abergele.
*Diaper, Albert, Bury St. Edmund's.
Young, Joseph, Leicester.
Goodliffe, George, Hammersmith.
Aylesbury, William Thos., jun., Brighton.
Bouttell, Harold, Sudbury.
West, Arthur Henry, London.
Normand, Claude, Hammersmith.
Goskar, James John, Cambridge.
Court, George Frederick, Worcester.
Richmond, Robert, jun., Leighton Buzzard.

The above names are arranged in order of merit.

FIRST, OR PRELIMINARY EXAMINATION.

One hundred and ninety-three Candidates were examined; the following one hundred and three passed, and were registered as

APPRENTICES OR STUDENTS.

Elkington, Thomas Valentine, Spalding.
Brown, James, Ampthill.
Lewis, John Lemont, Uckfield.
Catterns, Heneage Parker, London.
Watts, Joseph, jun., Attercliffe.
Ormond, Richard, Pembroke.
Capstick, John William, Lancaster.
Sumner, Benjamin Tindale, Horncastle.
Gall, Alfred, Woodbridge.
Lunn, Thomas, Worcester.
Gower, Alfred John, Tonbridge.
Nix, William, Coventry.
Cooper, James, High Wycombe.
Clifford, Thomas Andrews, London.
Oxford, John Henry, Wellington, Somerset.
Equal. { Goodenough, Joshua, Norwich.
Herring, William Corder, London.
Smith, William John, Leicester.
Equal. { Flemons, Joseph, Northampton.
Gall, Arthur, Woodbridge.
Betts, Alick Stephen, Woodbridge.
Equal. { Nicholson, Edward, Manchester.
Thomas, John Richard, Chesterfield.
Neale, John, Woodbridge.
Rowe, Sampson, Redruth.
Hetherington, James, Chippenham.
Hall, Edwin, Horncastle.
Heslop, George, Newcastle-on-Tyne.
Wright, Thomas, Leicester.
Equal. { Evans, James F. W., Milford Haven.
Makinson, Thomas, Hampstead.
Gregory, Frank, Tonbridge.
Equal. { Fingland, James, jun., Wavertree.
Goulden, Herbert, London.
Holmes, Philip, Walham Green.
Equal. { Markham, William Charles, Bristol.
Vince, James, of Lancaster.
Tamplin, William Dunlop, Bristol.
Equal. { Downes, Charles Hagger, London.
Thirlby, W. Arthur, Ashby-de-la-Zouch.
Equal. { Kilby, Arthur, Bristol.
Lunan, Alexander, Aberdeen.
Russon, Samuel Tonks, Birmingham.
Thompson, George Alfred, Tonbridge.
Young, Joseph, Leicester.
Equal. { Corder, Sheppard, Norwich.
Green, John Alfred, Lincoln.
Jones, William, Louth.
Equal. { Atkinson, David, London.
Thomas, Henry James, Llandilo.
Wenham, George Daniel, King's Lynn.
Williams, John, Newcastle-on-Tyne.
Equal. { Manlove, Richard Joseph, Slough.
White, William Henry, London.
Jones, Jabez A., Birmingham.
Hutton, Robert Henry, Wisbeach.
Equal. { Carr, Edward Francis, Alnwick.
Morgan, William John, Chester.
Equal. { Thomas, Evan M., Newcastle Emlyn.
Ward, John James, Newark.
Equal. { Kent, George Frederick, Bristol.
Verity, William, Northampton.

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* Passed with honours.

Equal.
Dangerfield, Edward, High Wycombe.
Rimmington, George, Bradford.
Wheeler, Fredk. Ebenezer, Manchester.

Equal.
Bennett, Henry Charles, Leigh.
Hughes, Evan Grismond, Llandilo.
Jones, Edward, jun., Newport, Salop.

Field, Charles, Netley.
Tooke, George Stannard, Norwich.

Equal.
Bulcock, Joseph Henderson, Clitheroe.
Seaman, James Saunders, Marlow.

Equal.
Herd, H. W., Bowness-on-Windermere.
Slater, Arthur W., New Whittington.

Equal.
Greaves, Abraham Walter, Chesterfield.
Moore, John Ernest, Southampton.
Sharp, Alfred Joel, Spalding.

Jones, John, Barnet.

Equal.
Butcher, Henry, Wolverhampton.
Clegg, Joseph, Manchester.
Griffiths, Frank Herbert, Hereford.
Holmes, Chas. J., Kingston-on-Thames.

Equal.
Baldock, James Thomas, Rochester.
Burbidge, William Ridgway, Broadstairs.
Collier, Philip Davies, Reading.
Macdonald, John, Montrose.
Miller, Cecil Bradley, Wellingborough.
Owen, Samuel, Leominster.
Prior, Saml. Fowler, Wath-upon-Dearne.
Sherriff, George, South Norwood.

Equal.
Archer, Albert, Newport, Mon.
Chadwick, James, St. Helen's.
Hartland, Charles, Bristol.
Hayhoe, William, Diss.
Hollick, Richard, Birmingham.
Howse, Henry William, London.
Jones, William Ellis, Barmouth.
Kennerley, William, Manchester.
Mumford, Francis Charles, Gloucester.
Parker, Wm. Stephen, Hammersmith.
Romano, Frederick W., London.
Shirley, Stephen Shillito, London.
Wolff, Edward Parker, London.

The above names are arranged in order of merit.

The following were the questions in this Examination:—

LATIN.

Translate into English two or more of the following sentences:—

1. Eâ re permissâ, diem consilio constituerunt, et jurejurando, ne quis enuntiaret, nisi quibus communi consilio mandatum esset, inter se sanxerunt.
2. Huc Cæsar magnis nocturnis diurnisque itineribus contendit, occupatoque oppido, ibi præsidium collocat.
3. Aquam cum Cantharide decoque ad dimidium et cola. Liquori colato immisce Ceratum; dein vaporet ad idoneam crassitudinem.
4. Cum mucilaginis Acaciæ tantillo subige in massam, dividendam in pilulas singulas grana quatuor pendentes.

5. Decline *liquor*, a solution, with the proper Article or Demonstrative Pronoun attached.

6. Decline *qui* and *meus*.

7. Give the Gerunds, Supine, and Participles of *capio*.

8. In which case are nouns referring to a particular time placed? Give an example.

9. What is meant by Government? Give one or more examples.

ARITHMETIC.

10. Multiply 15s. 11¾d. by 34.

11. If two horses eat 8 bushels of oats in 16 days, how many horses will eat 3000 quarters in 24 days?

12. Find the greatest common measure of $\frac{844}{480}$.

13. From 64¼ take ⅜ of ¾.

14. Divide 72·1564 by ·1847.

ENGLISH.

15. What is a verb? Explain by examples. State the difference between an active and a passive verb. Give examples.

16. What does the present tense express, and what the future?

17. Explain the difference between a regular and irregular verb.

18. In which case are the nouns in the following sentence?—John is a bright boy, though he dislikes work.

19. Correct the following:—He wished for another one, though he possessed two already.

Write upon *one* of the following subjects:—

20. The enjoyments of a cultivated mind.
The value of a good character.
Are drilling and gymnastics desirable for young, growing boys?

The following, having presented to the Board certificates of examination by legally constituted Examining Bodies, and the said certificates having been approved, were registered as

APPRENTICES OR STUDENTS.

Aldridge, Joseph Henry, Brighton.
Buckell, Leonard Martin, Romsey.
Dennis, William R., London.
Jesser, Alfred Henry, Southampton.
Lomas, Charles Benjamin, Towcester.
Macord, Horace Walford, London.
Minchin, Frederick, London.
Mumby, C. J. Everitt, Bury St. Edmund's.
Noble, John, South Shields.
Norman, Joseph Slaughter, Royston.
Pitman, Thomas, Sherborne.
Warner, Thomas, Bulkington.
Wyles, William, Market Deeping.

The certificates of the examination of the undermentioned were, in accordance with the regulation of Council, dated February 2, 1870, received and approved.

Davies, Thomas, Newcastle Emlyn.
Denton, Francis William, Leeds.
Hindson, James Alfred, Hull.
Orton, William Billing, Manchester.
Pearson, Daniel, Dudley.
Perks, Cloudesly Edward, Hitchin.
Riches, William James, North Walsham.
Sharrah, Richard, Hull.
Thompson, Benjamin, Brighton.
Thompson, James, Hull.

February 25*th*, 1870.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Gale, Garle, Haselden, Ince, and Southall.

MODIFIED EXAMINATION.

Thirty Candidates presented themselves for examination; the following twenty passed, and were duly registered as

CHEMISTS AND DRUGGISTS.

Baker, Joseph, Liverpool.
Blackmore, John Joseph, Exeter.
Blunt, Walter Buswell, Leicester.
Brooks, Job Edwin, Oldbury.
Crawshaw, James Henry, Sheffield.
Grindon, George Frederick, Leamington.
Jeremy, David, Brixton.
Lugg, James John, Torquay.
Matthew, Josiah, Dalston.
Meredith, John, Worcester.
Palethorpe, William, Radford.
Slack, Joseph Kershaw, Ormskirk.
Taylor, Henry William, Lincoln.
Tebbs, Richard, London.
Turner, John, Ramsgate.
Wade, John, Cardigan.
Watkinson, William Joseph, Preston.
Weaver, Theophilus, Wolverhampton.
Williams, John, Llanbaddoc.
Woolley, John George B., Nottingham.

BOTANICAL PRIZE FOR 1871.

A Silver Council Medal is offered for the best Herbarium, collected in any part of the United Kingdom between the first day of May, 1870, and the first day of June, 1871; and should there be more than one collection possessing such an amount of merit as to entitle the collector to reward, a second prize, consisting of a Bronze Medal, and also Certificates of Merit, will be given at the discretion of the Council. In the event of none of the collections possessing such an amount of Merit as to warrant the Council in awarding Medals or Certificates, none will be given.

The collections to consist of Flowering plants and Ferns, arranged according to the Natural System of De Candolle, or any other natural method in common use, and to be accompanied by lists, arranged according to the same method, with the species numbered.

The collector to follow some work on British Botany (such as that of Babington or Bentham), and to state the work which he adopts. The name of each plant, its habitat, and the date of collection, to be stated on the paper on which it is preserved.

Each collection to be accompanied by a note, containing a declaration, signed by the collector, and certified by his employer, or a Pharmaceutical Chemist to whom the collector is known, to the following effect:—The plants which accompany this note were collected by myself, between the first day of May, 1870, and the first day of June, 1871, and were named and arranged without any assistance but that derived from books.

In estimating the merits of the collections, not only will the number of species be taken into account, but also their rarity or otherwise, and the manner in which they are preserved; and should a specimen be wrongly named, it will be erased from the list.

The collections to be forwarded to the Secretary of the Society, 17, Bloomsbury Square, on or before the first day of July, 1871, indorsed "Herbarium for Competition for the Botanical Prizes." After the announcement of the award, they will be retained one month, under the care of the Curator of the Museum, for the inspection of persons connected with the Society, and then returned to the collectors, if required.

No candidate will be allowed to compete, unless he be an Associate, Registered Apprentice, or a Student of the Society, or if his age exceed twenty-one years.

FREE ADMISSIONS TO THE ROYAL BOTANIC SOCIETY'S GARDENS, REGENT'S PARK.

The following pupils of the class of Botany and Materia Medica, in the Pharmaceutical Society, after examination in Elementary, Structural, and Physiological Botany, by Professor Bentley, have had free admissions to the Gardens in the Regent's Park given to them:—

Mr. Frank Adams.
„ W. T. Aylesbury.
„ F. J. Barrett.
„ James Bell.
„ Harold Bouttell.
„ F. P. Brown.
„ Horace Davenport.
„ W. K. Ferguson.
„ C. E. Fox.
„ Robert M. Fowke.
„ Charles Fryer.
„ J. P. Jackson.

Mr. R. W. Kiddle.
„ Edward Lloyd.
„ W. H. Page.
„ F. H. Peck.
„ H. E. Price.
„ W. Raffle.
„ Robert Richmond.
„ Edward Henry Storey.
„ W. P. Swift.
„ Philip Vincent.
„ E. A. Webb.
„ G. E. Williamson.

The above names are arranged in alphabetical order.

These orders will admit to the Gardens upon ordinary days in the months of March, April, and August, from 9 A.M. till 1 P.M.; and in May, June, and July, from 7 A.M. till 1 P.M. Such orders, therefore, give every facility to those who possess them of making themselves practically acquainted with plants.

FINANCIAL STATEMENT.—*From January 1st to December 31st*, 1869.

RECEIPTS.				£	s.	d.
Balance in Treasurer's hands (Jan. 1st, 1869)				2206	0	1
Life Members' Fund:						
Fees	84	0	0			
Interest	84	14	4			
				168	14	4
Government Securities:						
Interest				190	11	8
Rent				100	0	0
Arrears of Subscriptions				132	6	0
Subscriptions:						
364 London Members	382	4	0			
1418 Country Members	1488	18	0			
403 Chemists & Druggists, Members	423	3	0			
405 Entrance Fees, Chemists & Druggists, Members	850	10	0			
499 Apprentices	261	19	6			
310 Associates	174	6	0			
Donation	1	1	0			
				3582	1	6
Registration Fees:						
105 Pharmaceutical Chemists	809	11	0			
187 Chemists and Druggists (Minor Examination)	717	3	0			
716 Chemists and Druggists (Modified Examination)	751	16	0			
659 Apprentices (Preliminary Examination)	1383	18	6			
128 Examination Fees	184	8	0			
143 Registration Fees as Chemists & Druggists in Business	750	15	0			
16 Registration Certificates (Jury)	0	16	0			
				4548	7	
Lectures, Fees				236	15	6
Laboratory, Fees				1060	2	0
'Register,' sale of				208	10	6
Balance due to Secretary (Dec. 31st, 1869)				8	0	10
				£12,436	9	0

EXPENDITURE.				£	s.	d.
Balance due to Secretary (January 1st, 1869)				34	2	8
Advertisements				27	9	0
Apparatus				20	6	3
Carriage				9	13	10
Collector's Commission				25	13	9
Conversazione	104	18	8			
Pharmaceutical Meetings	19	17	2			
				124	15	10
Examiners, Boards of (England and Scotland)				1016	18	9
Expense of the Society in Scotland				114	7	10
Furniture				35	7	8
Government Securities:						
Investment				4066	10	0
Honorarium to Secretary and Registrar				105	0	0
House Expenses				68	11	9
Journal, Balance of Account				81	18	8
Laboratory:						
Director's Salary for 1869	200	0	0			
Director's percentage on £991. 2*s.* 0*d.*, Fees for Session 1868–1869	247	15	6			
Demonstrator's salary for 1869	100	0	0			
Assistant - Demonstrator's salary (1 quarter)	12	10	0			
Porters' Wages, etc.	88	5	6			
Chemicals, etc.	231	4	3			
Prize Medals	0	14	6			
				880	9	9
Law Costs				232	9	9
Lectures:						
Professor of Chemistry and Pharmacy, including payment of Assistant in his Department	300	0	0			
Professor of Botany and Materia Medica, including payment of Assistant in his Department	262	10	0			
Subscription to the Royal Botanical Gardens, 1868 and 1869	42	0	0			
Prize Medals, etc.	6	10	1			
				611	0	1
Library				47	10	10
Museum:						
Specimens and Sundries	49	1	2			
Curator's Salary	100	0	0			
				149	1	2
Postage				153	11	4
Registrars' Certificates of Deaths				5	9	6
'Register,' cost of publication				453	11	5
Rent, Rates, Taxes, and Insurance				239	2	5
Repairs and Alterations				267	18	7
Repayments				13	13	0
Salaries:						
Secretary and Registrar	437	10	0			
Assistant-Secretary, Clerks, and servants	598	2	6			
				1035	12	6
Stationery, Printing, Engraving, and Office Expenses				282	12	7
Sundries:						
General	26	10	0			
Diploma Cases	29	9	6			
Vienna Congress	60	0	0			
				115	19	6
Travelling Expenses				204	11	4
Deposit Note at Bankers'				1000	0	0
Balance in Treasurer's hands				950	3	1
				£12,436	9	0

BENEVOLENT FUND ACCOUNT FOR THE YEAR 1869.

	£	s.	d.	£	s.	d.
Balance in Treasurer's hands (Jan. 1, 1869)				31	1	9
Balance in Secretary's hands (Jan. 1, 1869)				0	2	9
Dividends on invested capital				238	18	9
Donations	37	13	2			
Subscriptions	649	4	7			
				686	17	9
Balance due to Secretary (Dec. 31, 1869)				0	0	3
				£957	1	3

	£	s.	d.	£	s.	d.
8 Annuitants, to Christmas, 1869, at £30 each	240	0	0			
2 Annuitants, elected Oct. 1869 (2 months to Christmas), at £5 each	10	0	0			
				250	0	0
Member at Jersey, from 1852 to 1868, age 63, cripple from rheumatic gout, now a Candidate for Annuity	20	0	0			
Member late at Brighton (third grant)	10	10	0			
Orphan daughter of a late Member at Southampton (third grant)	10	0				
Member late of London, age 48, ill-health	10	0	0			
Widow of a late Member at Flint, age 56	20	0	0			
Widow of a late Member at Leominster, aged 55, elected an Annuitant in October, 1869	10	0	0			
Widow of a late Member at Lancaster, age 61, now a Candidate for Annuity	10	0	0			
Widow of a late Member at London, age 50 (third grant)	5	0	0			
Associate of the Society for the year 1842, blind	10	0	0			
Registered Chemist and Druggist at Leicester, age 72	10	0	0			
				115	10	0
Premium on the Orphan Bentley's Policy of Assurance	1	11	2			
Advertisements	1	8	9			
Postage	12	15	3			
Printing and Stationery	14	7	0			
				30	2	2
Purchase of £150 Consols				139	13	9
Balance in Treasurer's hands (Dec. 31, 1869)				421	15	4
				£957	1	3

	£	s.	d.
Consols., 31st December, 1868	9850	0	0
Consols., purchase of, as above	150	0	0
Total invested Capital	£10,000	0	0

We, the undersigned Auditors, have examined the Accounts of the Pharmaceutical Society, and find them correct agreeably with the foregoing statement; and that there was standing to the account of the Society, at the Bank of England, and with the Bankers, on the 31st of December, 1869:—

		£	s.	d.	£	s.	d.
General Fund, on deposit at Bankers					1000	0	0
Do.	New 3 per Cents.	£9000	0	0			
Life Members' Fund	New 3 per Cents.	2890	0	0			
					£11890	0	0
Benevolent Fund	Consols.	10000	0	0			
Pereira Memorial Fund	Consols.	100	0	0			
					10100	0	0
Bell Memorial Fund	Do.				2050	0	0
Secretary's Casual Relief Fund	Do.				105	0	0

Frederick Barron,
W. Hodgkinson,
John B. Mackey,
William Squire,
Robert Westwood,
} *Auditors.*

Feb. 22, 1870.

PHARMACEUTICAL MEETING.

Wednesday, March 2nd, 1870.

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

The Minutes of the previous Meeting having been read, the following

DONATIONS TO THE LIBRARY AND MUSEUM

were announced, and the thanks of the Meeting given to the respective donors thereof:—

Reports on the Progress of Practical and Scientific Medicine in Different Parts of the World: from Dr. Dobell.—London University Calendar for 1870: from the University.—The Official List of Registrars of Births, Deaths, and Marriages: from the Registrar-General.—Pharmaceutical, or Medico-Botanical Map of the World; Book of Pharmaceutical Labels: from Mr. G. Barber.—Fruits of *Zizyphus vulgaris:* from Mr. H. W. Pound.—Specimen of Guarana prepared from the seeds of *Paullinia sorbilis:* from Mr. T. F. Hinchliff.—Specimen of False Manna, supposed to be from Normandy: from Mr. Stoddart.—Specimen of the Tallow of *Stillingia sebifera,*—Seven Dried Specimens of Medicinal Plants:—from Mr. Daniel Hanbury.—Specimens of Square Poison Bottles, and Bottles Graduated to Tea and Tablespoons, were exhibited by the York Glass Company.

Mr. COLLINS drew attention to some specimens of bark, from the new forest in Eastern Bolivia, and stated that they were remarkably fine. An account of this forest had been given by Mr. Howard in the 'Journal of Botany,' and also the method of procuring the barks. Since then another forest had been discovered, and he hoped that, at their next meeting, they would have specimens of the bark there obtained to place before the members.

NOTES ON THE PHARMACOPŒIA.

Dr. REDWOOD said that, before resuming the discussion upon the subject of the Pharmacopœia, he thought it would be advantageous to have one or two communications brought under the notice of the meeting, which might serve as topics, amongst others, for discussion that evening. He had received two or three communications from gentlemen in the country, one of which appeared in the current number of the 'Pharmaceutical Journal,' and related to a subject which had been brought before them at a previous meeting, namely, Linimentum Potassii Iodidi cum Sapone. They would, no doubt, many of them, have seen the communication of Mr. Smith, of Cheltenham, who explained the circumstances under which the liniment was brought under the notice of the Pharmacopœia Committee, and the manner in which it had been for some years previously prepared by himself, and he (Dr. Redwood) presumed others in the town in which he lived. It appeared from Mr. Smith's statement that he had been accustomed to use white curd-soap, and he seemed to consider that that was the kind of soap which gave the best result. But the specimen which Mr. Smith had sent to illustrate the liniment, when prepared, differed considerably from what some of them had been looking to as the character which it was most desirable it should present. The specimen sent by Mr. Smith had a sort of frosted appearance, looking somewhat like cold-cream; and in that state, Mr. Smith told them, it preserved its character remarkably well. He (Dr. Redwood) had also received a communication on the same subject from Mr. Francis, of the house of M'Culloch, Squire, and Francis, and he said:—

"At the date of the issue of the 'British Pharmacopœia' in 1867 I tried many experiments with a view to obtain, if possible, the linimentum potassii iodidi cum sapone in a satisfactory condition. The sample sent herewith is one of those results, and has been prepared nearly three years. I do not observe, even now, any tendency to change, and think, therefore, you may like to place it upon the table on Wednesday evening, as I gather from the Journal the subject may then be further referred to. In this instance, sapo mollis was employed, in place of sapo durus as directed in the Pharmacopœia, but sufficiently in excess to compensate for the substitution. My impression is, that the difference in behaviour arises in a great measure from the fact that the one is a potash, and the other a soda, soap."

Then they had the liniment in the two forms in which it had been produced by different pharmaceutists; in the one case a solid mixture somewhat resembling cold-cream, and in the other a tremulous jelly, semi-transparent, or almost perfectly transparent. In both these states the liniment appeared to be capable of being kept for any reasonable time, and the question arose—and it was a question to which it was very desirable that practical men should direct their attention—which of the two was really the most advantageous to have ordered in the Pharmacopœia? Then he had received a communication from Mr. Long, of Croydon, who referred to two of the preparations of the Pharmacopœia, and thought that some reference might advantageously be made to them in the course of this discussion. The one was the preparation which, in the present Pharmacopœia, was called aqua camphoræ, which in the London Pharmacopœia was named mistura camphoræ, and the other was the infusion of roses, which was formerly called infusum rosæ compositum, and was now named infusum rosæ acidum. Mr. Long found that, in his experience, most medical men continued to prescribe these preparations by the names used in the London Pharmacopœia, and he thought it desirable that some reference should be made to this subject, with the view of ascertaining whether medical men really did prefer the one preparation rather than the other, and, if they did, whether it would not be desirable that that preparation which was generally preferred should be the one ordered in the Pharmacopœia. On referring to these preparations they would see at once there was a very slight difference—no practical difference—between the mistura camphoræ and the aqua camphoræ of the British Pharmacopœia. The only difference was that in the London process the camphor was reduced to powder with a few drops of spirit, whereas in the new process no spirit was used. The solution in both cases would be practically the same, namely, a saturated solution of camphor. In the case of the infusion of roses there was a greater difference, the process in the present Pharmacopœia being that of the Dublin College, in which there was no sugar. It might certainly be a fit subject for consideration as to which of these processes was the better. Perhaps, before he sat down, he might be allowed just to call the attention of the meeting to one or two preparations which were referred to by himself on first introducing the subject, but with respect to which no practical remarks had yet been made, although it was very desirable that some opinion should be elicited. One was extractum ergotæ liquidum, and the question was whether, in its preparation, the exhaustion of the ergot by means of ether, could be omitted without disadvantage? Had any practical pharmaceutist any experience to communicate with reference to this question? Another preparation which had been to some extent adverted to, but which it would be very desirable to have more information upon was the emplastrum belladonnæ. In the British Pharmacopœia a process was given for that plaster, in which the alcoholic extract of belladonna was added to resin plaster. Some remarks had been made upon this plaster by a gentleman who was present, but he (Dr. Redwood) had heard from other sources complaints with reference to it, to the effect that it was much more liable to escape from beneath the leather on which it had been spread, and to penetrate through the leather, and become a source of annoyance to the patient on this account than the old plaster, which was made with the aqueous extract. Now, having had several specimens of the plaster made by different operators, he had observed that they varied considerably in consistency, according to the manner in which the process had been carried out, and it was very desirable to ascertain how far these had given satisfaction in their use.

The CHAIRMAN observed, with regard to linimentum potassii iodidi cum sapone, that he had made it with Castile soap, as recommended by Mr. Squire, and sometimes it had answered and at others not. Sometimes it had formed a preparation similar to that upon the table, and it had continued in that condition for a very long time, until a sudden change of temperature had occurred. A sudden frost, or even a transit from one place to another, had caused it to separate completely; but on the application of gentle warmth and agitation it had again assumed its gelatinous form, and had apparently been as perfect as before. With two specimens of soaps bearing the same brand, different results had been obtained; and, on examining the two soaps, one was found to be perfectly soluble in spirit, and the other almost insoluble. He simply mentioned this as a matter of fact and experience.

Dr. REDWOOD said he did not notice that Mr. Wood was present, but in a recent number of the Pharmaceutical Journal, he (Mr. Wood) had described a process for making a soap very suitable for the preparation of soap liniment. This soap was made from almond oil, and contained almost exclusively oleic acid. He (Dr. Redwood) had not had a specimen of the soap made by Mr. Wood, so as to be able to try it, but he thought it was quite worthy of consideration, whether soap of that description should not be introduced into the Pharmacopœia, the oleate being soluble in spirit and remaining in solution, and, therefore, being suitable where a stearin soap was not.

Mr. HILLS said there seemed to be a difficulty about making the linimentum potassii iodidi cum sapone, but he believed it could all be obviated by using equal parts of hard and soft soap. He had seen it made over and over again in that way.

Mr. GALE thought soft soap alone would be better even than a mixture of hard and soft soap.

The CHAIRMAN pointed out a specimen before them made from soft soap alone, and added, that it was an elegant preparation, perfectly transparent.

Mr. CARTEIGHE said they had been told by the Editor of the Pharmacopœia that this preparation was introduced, as Mr. Smith had said, on the suggestion of Mr. Rumsey, of Cheltenham; and now, after the lapse of a long time, they were told that white curd soap was the sort of soap originally used, and which afforded the best result. It was a pity they were not told this before. If the preparation were to be what Mr. Rumsey originally proposed, it was clear they must use curd soap. If, however, the perfectly gelatinous and "taking" preparation was required, then they must use either a mixture of hard and soft soap, or soft soap alone.

Dr. REDWOOD said there was one point which must not be lost sight of. He quite agreed with those gentlemen who considered that the transparent gelatinous preparation was the most elegant, and would, under all circumstances, be the most convenient for use. He thought the majority of those who had had the preparation under their notice, seemed to be agreed in thinking that it was the form of preparation which it would be the most desirable to be recognized in the Pharmacopœia. He, however, could not agree in thinking, if they could attain the object otherwise, that it was desirable to use soft soap. There was a very serious objection to soft soap, or to potash soap at all, which was the great difficulty of getting it in a neutral condition; and hence soda soaps would always have the advantage over potash soaps, where they were equally applicable. Soda soaps were purer, because in making them they had the means of separating the soap from the saline matter which would be in the solution.

NOTES ON THE B. P. SOLUTIONS OF IODINE, AND OTHER PHARMACOPŒIAL PREPARATIONS.

BY WILLIAM MARTINDALE,

DISPENSER, AND TEACHER OF PHARMACY TO THE UNIVERSITY COLLEGE HOSPITAL.

There are three solutions of iodine in the Pharmacopœia,—the tincture, liquor, and liniment.

Tinctura Iodi.—The formula for this is the same as that of B. P. 1864, and the quantity of iodine is equal to that in tinctura iodinii composita, P. L. 1851, but the iodide of potassium is only one-fourth. This quantity of iodide of potassium does not seem to be of any practical utility that I can conceive,—in fact, for one purpose for which it is used, it is a decided objection. The quantity of the iodide in the London tincture, and it was much in excess for the purpose, rendered it miscible with water, but that in the present tincture does not, as on its addition to water, the bulk of the iodine is precipitated.*

If it be necessary, and for internal administration it is necessary that it should mix with water, why not make it with water in the first instance, more especially as it has been stated that a spirituous solution of iodine undergoes decomposition on being kept? I find practically that 23 grains of the iodide will dissolve 20 grains of iodine in 1 ounce of water. A little excess of the iodide renders the iodine more readily soluble, as in liquor iodi, B. P., 30 grains are employed to dissolve 20 of iodine in the same quantity of water. This liquor is known as Lugol's solution, when diluted, it is the best preparation for injecting in hydrocele, etc.

I would suggest the use of two liquors, one to be called liquor iodi (in place of the tincture), and the other liquor iodi fortior.

The case in which the presence of the iodide in the tincture is objectionable, is, when it is added to boiling water, to yield the vapour of iodine for inhalation; for this purpose the iodine would be more completely vaporized if not held in solution by the water. The old Edinburgh simple tincture of iodine answers best for this purpose.

For external use spirituous solutions have this disadvantage—they have not "body" enough, as the spirit volatilizes too quickly, leaving the iodine in a free state upon the skin, in which condition little of it is either absorbed, or produces any counter-irritation, as it, too, becomes quickly vaporized.

Iodine and Oil of Tar.—A solution, or rather a mixture, as it is not a mere solution, of 1 part of iodine with 4 of light oil of wood tar, makes a useful application. In mixing the iodine and oil of tar great heat is evolved—part of the oil is oxidized and becomes resinous. This resinous portion, being held in solution in the excess of oil, on applying the mixture to the affected part, acts like a varnish, and prevents the vaporization of the iodine. This application is found to be very useful in ringworm and similar skin affections.

Linimentum Iodi.—When iodine is intended to produce counter-irritation, or promote the absorption of glandular swellings, this is a suitable application, but for the reasons I have stated, it has not "body" enough—much of the iodine is vaporized and produces no effect; moreover, when this liniment is applied repeatedly, which is often desirable, the skin gets hardened, and the iodine takes but little effect until this dead skin has peeled off. Its application then causes great pain. Having had it applied to myself for a chest affection, I remember the agony it caused me when painted on the newly formed skins, the deadened cuticle having peeled off. I think the camphor in it might be replaced by an equal quantity of glycerine with advantage. Experiments upon myself and others tend to show that the quantity of glycerine should not be added in excess of that which I have named, that is, one part in forty, especially when employed to produce counter-irritation; if more glycerine be used, its effect cannot be localized, as the application gets rubbed by the clothing before it has sufficiently dried on the skin. The quantity I have suggested seems, likewise, to promote its absorption.

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* In all proportions between one part of the tincture, and from three to forty of water, this precipitation or crystallization of the iodine takes place, but it is most evident on mixing one part of the tincture with six of water. My attention has been frequently drawn to this fact when rinsing with water a measure glass that has contained the tincture, the free iodine causes the glass to have a greasy appearance, in which condition it has a repulsion for water.

On adding the liniment of iodine to water, a still more abundant separation of the iodine occurs.

My experiments were not carried far enough to produce constitutional effects, but as a counter-irritant, I did not perceive that an iodine liniment containing iodide of potassium had any advantage over one not containing it.

The Ointments of Iodine, and Iodide of Potassium.—The application of these is generally aided by friction, and as, before its addition to the lard, the iodide of potassium is directed to be dissolved, in the one case in proof spirit, and in the other in water, these solvents become evaporated, and the iodide crystallizes out. When, therefore, the ointments are applied, these sharp crystals act like pieces of glass, and irritate the part in such a manner that their continued use, which in glandular affections is necessary, cannot be persisted in. Here again glycerine, diluted with spirit for iodine ointment, and with water, for iodide of potassium ointment, would be a better solvent. This brings me again to the unfortunate—

Linimentum Potassii Iodidi c. Sapone.—This preparation I consider is a step in the right direction, as, if iodide of potassium produces any effect, when applied externally, in the liniment, the objections I have raised about the ointment are avoided.

Some samples of olive-oil hard soap I have lately tried, even made by the same maker as that which I have found repeatedly to yield good results, have not proved so uniform in this respect. The soap answers better recently prepared, and that bearing the brand of F. Court Payen, I find makes a satisfactory preparation, if the solutions of the salt and the soap be mixed by trituration at equal temperatures, but it will not keep much above a week without separating.

Iodide of potassium seems to have a similar effect, in a modified degree, on a solution of olive oil and soda soap that chloride of sodium has in its manufacture; it precipitates it in time, but in a hydrated state, so that if more of the soap were used, there would be no separation of water. I find what Mr. Squire states is correct, that if prepared with powdered soap, which contains less water, there is no separation.

Mr. Smith, of Cheltenham, in this month's Journal confesses he has led us into error. The hard soap he meant to be curd soap, which is not officinal in the Pharmacopœia.

On the 24th January last, I made the samples exhibited bearing that date, and this morning likewise prepared a little, marked No. 6, with strictly B. P. quantities. It is what I consider the preparation ought to be, but it will not keep in this condition.

1. B. P. Made 24.1.70.—Separated into two strata; the upper one is about one-third of the whole, and contains all the soap, as the lower one will not produce the lather which is characteristic of soap.

2. Made with powdered B. P. soap 24.1.70.—A firm, solid semi-opaque jelly; it has a leprous appearance against the sides of the bottle, but has not separated.

3. Made with common yellow soap 24.1.70.—A solid, white and opaque jelly.

4. Made with white curd soap 24.1.70.—White and opaque or semi-opaque, being more translucent than 3.

5. Made with B.P. soft soap.—Clear, transparent, and semi-gelatinous.

6. Made with recent olive-oil hard soap bearing the brand of F. Court Payen. Semi-transparent, more gelatinized than 5, and, when slightly agitated, it exhibits some of the characters of the jelly of the pastrycooks.

Acetum Scillæ.—This preparation, which is one of the oldest galenical formulæ in the Pharmacopœia, its origin by Pereira being ascribed to Pythagoras, has been the subject of some remarks by Mr. Bland. He objects to the addition of proof spirit. My experience of it is that, either with or without the spirit, there is always a deposit formed in it, but I think less when the spirit is added. In the London Pharmacopœia of 1721 spirit was not mentioned in the formula for its preparation, but in the next edition there is directed to be added to it "about one-twelfth its quantity of proof spirit, that it may keep the longer from growing mothery."

The squill has always been directed to be dried before digesting or macerating in the vinegar or diluted acetic acid. The volume Pythagoras wrote on squill not being extant, I am not able to certify that it was not so ordered in the original formula; but it would be more rational to use the bulb in the fresh state, seeing that much of its activity is volatilised on drying the squamæ. The fresh bulbs are easily preserved in dry sand, being so exceedingly tenacious of life that Dr. Christison says, "My large bulbs, while lying on my museum table, produced two stems two feet tall, and covered with flower buds, many of which became fully expanded; and a small one, after being kept in the same place for at least eight years without any signs of life, began also, without any change of circumstances, to push forth its stem."

As four-fifths of the weight of the fresh bulb consists of moisture, I think an expressed juice mixed with acetic acid, and clarified by defæcation or other means, would yield the best preparation. Rectified spirit might likewise be added to the expressed juice in sufficient quantity to separate the greater portion of the probably inert mucilaginous matter, thus a preparation would be produced corresponding to succus taraxaci and other expressed juices. This might supplant the tincture of the present Pharmacopœia.

It is somewhat curious that up to 1851 the fresh bulbs had always been officinal in the London Pharmacopœias, but, as before free-trade principles had come into vogue, the duty on the fresh bulb and dried squamæ was equal, for the sake of economy squill was always imported in the dried state. I think that medicine, especially if it has to make a sacrifice of some of its virtues, ought not thus to bow to commerce, and, as I now believe both are admitted free of duty, we could easily, by making our request known, be supplied with the fresh bulbs. I have made frequent inquiries for them, but have always been informed that the fresh bulbs do not now come into the London market. I took the trouble, when in Paris three years ago, to get two procured for me. One of them I noticed put forth a shoot last year, and I think both are yet possessed of life. I obtained them with the intention of trying to make the preparations I have suggested, but a fitting opportunity did not then occur. As many of the outer scales have become dry, I fear they will not now yield much expressed juice, but I intend trying them.

Oxymel Scillæ.—The directions for making this preparation are concise and definite, but not very practicable,—"Mix and evaporate by a water-bath until the product, when cold, shall have a specific gravity of 1·32." The plan generally adopted in making it is, to make the acetum with half the quantity of diluted acetic acid, using it one-half stronger than B.P. This thoroughly exhausts the squill if the "mark" be well pressed. One pint of this acetum, where two of the other are ordered in the formula, added to the honey, requires little evaporation to bring the oxymel to a proper consistence. If it be true that part of the medicinal property of squill is volatile, will not this preparation be much impaired by the long-continued application of heat? What advantage is there in evaporating the honey and acetum mixed together? In the London Pharmacopœia, 1851, the acetum was ordered to be concentrated by evaporation, and the honey added afterwards. This is more reasonable, although, on account of the difference in consistency of honey, the oxymel produced would vary a little in this respect.

If made with a strong acetum, prepared from the fresh bulbs, as I have suggested, concentration would be unnecessary.

Tinctura Aurantii.—This is directed to be made by macerating dried bitter orange-peel in proof spirit. As it is a flavouring agent, and seeing that fresh peel is so much superior to the dried in this respect, it has been suggested that the tincture should be prepared from it. No housewife thinks of preparing marmalade from dried orange-peel, nor should pharmacists be directed to prepare a tincture from it, seeing that at a certain season of the year Seville oranges can be had at nearly every village shop in the kingdom. The fresh peel yields a tincture which, when diluted with water, still remains clear, not like the present tincture, as it, on account of some of the aromatic principles having become resinous, and therefore insoluble in aqueous fluids, on the addition of water forms a milky mixture. If made with the fresh peel rectified spirit should be used; the juice contained in the peel will bring the tincture down to about the same strength of spirit as that of the present tincture.

Unguentum Hydrargyri Ammoniati.—This preparation containing one part of white precipitate in eight of the ointment, is unnecessarily strong, it is, in fact, dangerously so, when it has to be freely used for any length of time, such application being necessary in some skin diseases. If made with one-twelfth the quantity of white precipitate even, the precaution being taken to levigate it carefully with a little oil previous to the addition of the lard, it is, according to Dr. Tilbury Fox, of sufficient strength for nearly all cases where its application is desirable.

Plasters.—This group of preparations are rarely "home made," and as a rule their appearance, rather than their utility, is the point most considered in the wholesale trade. There seems to be a great redundancy of them in the Pharmacopœia. The same ingredients, with the proportions varied, are contained in emplastrum resinæ and emplastrum saponis. My experience of these plasters leads me to believe that in any case where they are used, their application might be replaced with advantage by the simple lead plaster, provided it be properly made. Lead plaster has not then the much admired opaque whiteness, which is preferred in the trade. The Pharmacopœia directions for its preparation are not sufficiently definite; nothing is said about the glycerine that is formed in the process, whether it is to be separated, or evaporated away—the plaster to be allowed to absorb as much of it as possible, or to be washed out by the "pulling" operation under water, which it generally undergoes to give it the saleable appearance.

My experiments with this and other preparations are not yet completed; on some future occasion I hope to be able to publish the results.

Among the other plasters, two are likewise very redundant in composition,—emplastrum picis and emplastrum calefaciens. In the latter formula, quantities of simples will have to be meted out no less than nineteen times. The effect of this redundancy is that nostrums, much simpler in composition, meet with a much larger sale,—Poor Man's Plaster, for example. One likes to know "the reason why" there should be such exuberance in their composition. I, in my teaching, am continually asked this question, and rightly so; if the formulæ are what they ought to be, they must be consistent with reason.

Posology.—Are the doses given meant for the guidance of the dispenser as well as the prescriber? If so, is a dispenser justified in refusing to compound prescriptions ordering medicines in larger doses? It is desirable to give the smallest dose of a medicine that will have the required effect, still the maximum doses stated are frequently much too small. For example, the dose of gallic acid is given, as 2 to 10 grains. I have not dispensed a less dose than 10 grains for years, and at times as much as 60-grain doses for albuminuria. Of extractum filicis liquidum, the dose given is 15 to 30 minims; I more frequently dispense 60 minims for a dose. Tinctura ferri perchloridi, 10 to 30 minims, it is given in 60-minim doses. Potassii iodidum, 2 to 10 grains, often 30-grain doses are administered.

The effect of this is often mischievous, as in the following instance. A few years ago, before the present Pharmacopœia was published, and when bromide of potassium was coming into use as a remedy for epilepsy, a physician wrote a prescription for a case ordering 20 grains in a mixture, to be taken three times a day. The patient took it to a chemist, who refused to dispense it, and neglecting the tact he ought to have shown, he sent the patient back to the physician to ask him if there was not some mistake. It afterwards came to an establishment with which I was then connected, and was dispensed without the least hesitation, as it had become with us an every-day prescription.

If the doses of the preparations must be stated, there ought to be three given,—the minimum, the maximum, and the poisonous dose,—to avoid the possibility of cases of this kind occurring.

In conclusion, I think the subject is so broad, that before another edition of the Pharmacopœia is published, the formulæ and preparations should be discussed here *seriatim*, like the clauses of a bill before a Committee of the House of Commons. Those that are good would meet with our approval, those that are capable of it would be amended, and those that are bad, or obsolete, would be condemned, as they only cumber the ground of the Pharmacopœia, our pharmacies, and the medical student's mental capacity. From my point of view, it may be that I am connected with a medical school of whose professors the unjust remark has been made, "they have no faith in medicine," but by the performance of my duties, I am able to take a wide survey of this subject, and I am convinced that much of it has either become obsolete, or is fast becoming so. Who, in the medical profession believes in the efficacy *per se* of such medicines as, thus, castor, expressed oil of mace, hops, myrrh, saffron, red sandal-wood, etc.? They enter into the composition of different compound formulæ, with very questionable advantage,—often to complicate them unnecessarily, and to obscure the effect of their action. Some things are almost too sacred for discussion. Among these are the Pharmacopœia, and, I should have thought, that bulwark of English liberty, trial by jury; yet I attended a debate the other evening at which youths in their teens, with all the assurance of a prime minister, condemned even this. Infallibility has been so much discussed of late, that to apply such a term to the Pharmacopœia would be more presumptuous than to the Pope, or a British sovereign, who, according to our constitution, can do no wrong. As a register of the strength of preparations, the Pharmacopœia is a necessity, and whatever deviation we may make in manipulation, we should ever be loyal in this respect.

We must not use a microscopic eye to search for little imperfections in it, but we may suggest improvements, which in the routine of our daily occupation experience has taught us are necessary. The present Pharmacopœia I consider is a marvel of correctness for such a work, taking into account the arduous task Dr. Redwood had in overcoming the prejudice each of the three kingdoms had formed against the previous edition. In this he has been eminently successful, which is some reward for his labours. I have to thank him for much information which I have always found him ready to give, and more especially for that contained in his excellent course of lectures delivered here; these form a good groundwork on which to build a Pharmacopœia.

I have sometimes noticed the want of it, and as it is our guide, I beg to propose that a copy of the Pharmacopœia be always placed on the table at these meetings.

University College Hospital, March 2nd, 1870.

The CHAIRMAN felt sure that, after the way in which the members had from time to time received the observations of Mr. Martindale, he had only to suggest to them that which they were anxious to give him, and that was a hearty vote of thanks for the important practical remarks which he had placed before them. He (the Chairman) did not think they would regret the adjournment of the discussion till that night, if only for the observations to which they had just listened. Mr. Martindale had suggested that every formula of the Pharmacopœia should be submitted to this Society in the same way that every clause of a Bill was submitted to the House of Commons. It had been shown that evening that great practical results did arise from bringing these formulæ before them and discussing them. At the last meeting it was suggested by Professor Attfield that they would be glad to receive the suggestions and experiences of the younger members of the pharmaceutical body, those who were daily in practical contact with the working of the Pharmacopœia; and he (the Chairman) hoped that some of those present were prepared to give some of their experiences, to state their difficulties, and to ask for an elucidation or explanation of them.

Mr. GERRARD (of Guy's Hospital) said he wished to make a few remarks with regard to compound ointment of mercury, which he had found a difficulty in preparing. The directions in the Pharmacopœia were to add the oil to the melted wax. It did not say that the oil was to be hot, and, from the directions given, he should infer that it was to be cold; but when they added oil to the wax it was immediately precipitated. When the mixture was nearly cold they were told to add camphor and ointment of mercury, and in doing so they got an unsatisfactory preparation, especially in making a large quantity. The Pharmacopœia instructions for making this ointment in small quantities might be practicable, but they were not practicable for making the quantity ordered in the Pharmacopœia. In dealing with a large quantity of camphor,—say four or six ounces,—it was difficult to get it in a state of powder sufficiently fine to make a smooth ointment; and the only way of getting over it was to melt the wax and oil together, then put in the ointment of mercury, and stir well; and when the mixture was getting cold, or towards a solid state, to put in the powdered camphor, and, by stirring it, they would get an ointment perfectly smooth and consistent. Then, again, with reference to hemlock poultice. In the Pharmacopœia it was ordered to be made with dry powdered leaf; but would it not be better to use extract for this preparation? because they knew very well that in the experience of eminent men the dry leaf of hemlock was found to contain scarcely any active principle. He had heard the opinion of several eminent medical men upon this point, and in the house where he was they were in the habit of using the extract instead of the powdered leaf, and found it answered better.

Mr. CARTEIGHE remarked that Mr. Martindale had dismissed the subject of fresh tincture of orange-peel more briefly than he should have liked, because it so happened that he had made tincture of orange-peel from fresh Seville oranges and rectified spirit, with all the assurance of certain eminent men at his back, that it was considered immeasurably superior to the officinal form, that of the British Pharmacopœia, but, unfortunately, the British public preferred the tincture made with the dried peel. He should, however, like to know what proportion of fresh peel Mr. Martindale would substitute for the dried.

Mr. MARTINDALE thought about double the quantity, the peel being cut thin.

Mr. SANDFORD considered one and a half for one a fair proportion, the thinly-cut fresh peel containing much less of the inert white interior than the dried.

A MEMBER remarked that there was a deficiency of tests given in the Pharmacopœia for some of the articles ordered. For instance, there was no chemical test for glycerine.

The CHAIRMAN said it certainly appeared to him to be a defect that in the Pharmacopœia there was no test but that of specific gravity for glycerine, which was daily becoming more and more important. It was a fact that some specimens of glycerine possessed all the physical characteristics required in the Pharmacopœia which were not fit to be used in making the tannic acid glycerine and the gallic acid glycerine.

Dr. REDWOOD said it was new to him to hear that the Pharmacopœia was deficient in the number of tests ordered. A statement had, indeed, been made in quite the opposite direction during the discussion of this subject, namely, that the Pharmacopœia required too much in the use of chemical tests and in the requirements of purity in the substances employed. He was not prepared to say that there might not be individual cases—he had no doubt there were, and the one referred to might be of that description—where the tests were not so complete as they might be, or as it was desirable that they should be. It was, however,—and he had adverted to the fact before—absolutely impossible to give such a complete system of tests of the substances ordered to be used in medicine as would ensure the absence of all impurities in them without greatly complicating the work, and enlarging it to an extent which would be very undesirable. Whilst they gave the leading tests for indicating the principal impurities most likely to occur, and which it was most important to guard against, they must at the same time leave much to the knowledge, skill, and judgment of those who had to put the work into effect. And, therefore, whilst they were educating their young men, and enabling them to provide against the introduction of such impurities in medicines as would interfere with their efficacy, they must from time to time, in successive editions of the Pharmacopœia, increase the number of tests, as they had done in those which had recently appeared. But he could not say that he ever expected to see a Pharmacopœia that would give tests for the detection of all impurities.

At the conclusion of the meeting, Dr. REDWOOD made some remarks on the preparation of the diluted nitro-hydrochloric acid of the Pharmacopœia. He said this had already been made the subject of several communications by gentlemen, who alluded to the fact that, when made as directed in the Pharmacopœia, it was liable to considerable variation in strength, arising from the loss of some of the evolved gases. Mr. Porter had suggested a special apparatus for its preparation, by which the loss of gas was avoided; but Mr. Porter's apparatus, although ingenious, was rather complicated and expensive. Mr. Porter, in his paper, alluded to the use of a more simple arrangement, but did not recommend it. Now, he (Dr. Redwood) found that by using two Winchester quart bottles, putting the mixed acids into one and the water into the other, and connecting the bottles by a tube partly of glass and partly of india-rubber, the loss of gas may be almost entirely prevented, and a uniform product obtained, which nearly answered to the tests given in the Pharmacopœia.

Mr. TILDEN said he thought in one respect the product, in whatever way it might be made, would not answer to the Pharmacopœia test, and that was in its neutralizing power. He found by calculation that the acids, in their unmixed state, had less neutralizing power than was assigned to them when mixed. But he had also shown that the acids, if mixed at once with the water, yielded a similar result to that obtained by the Pharmacopœia method if it be kept exposed to the light for about a week.

PROVINCIAL TRANSACTIONS.

BRISTOL PHARMACEUTICAL ASSOCIATION.

At the meeting of this Association held on Friday, March 11, 1870, Mr. W. W. Stoddart, President, in the chair, the following lecture on "Apothecaries, Druggists, and Pharmacists, Past, Present, and Future," was delivered by Mr. Charles Townsend:—

Mr. President, Ladies, and Gentlemen,—I wish to occupy your attention, and fear I may tire your patience this evening, with a slight sketch of the history of pharmacy, and of those engaged in its pursuit.

And as most of you are directly or indirectly concerned in the present position and future prospects of this branch of science, either as working bees somewhat wearily collecting the honey day by day, or as queen bees, receiving in stately contentment the gathered store,—I venture to hope your personal interest in the question will help me in some degree to make it attractive.

Whilst preparing my paper, I have been unwillingly but forcibly reminded of a young gentleman who, many years ago, was an enthusiastic member of a popular debating society, and who, being asked to write an essay on some subject agreeable to his tastes and talents, but which must not occupy *more than twenty minutes* in delivery, selected for his subject the "History of the World;" and, as you may well imagine, before his hour came, heartily repented of his rashness.

I am afraid an attempt to give even an outline of the history of apothecaries, druggists, and pharmacists in the past, and of their present position and future prospects within the limits of a short lecture, is almost an equally dangerous experiment. And I must ask for the indulgence of gentlemen present, my seniors in years and in knowledge, to whom much of what I have to say to-night may prove a thrice-told tale, and beg that for the sake of any who have never studied the literature of pharmacy, they will pardon me if my paper lacks the freshness which I trust it may bring to some of our members.

So far as I am aware, a complete history of pharmacy and pharmacists remains to be written, and if by anything I can say to-night, I can stimulate some of our younger brethren present, to whom we *must look*, to maintain and uplift the honour and dignity of our profession in the future, to sift and exhaust this fruitful and engaging subject, and to present in a compact form such a history, I shall feel that I am more than repaid for my slight efforts in this direction.

Some of our friends have made the study of the pre-adamite world their delight, and have by their researches added much to our strange and wonderful knowledge of those distant epochs when gigantic palms and ferns waved in luxuriant magnificence round the site of our ancient city, and mammoth ichthyosauri disported themselves in undisputed possession of our present homes.

In those happy days medicine was unknown, and every creature was permitted to live unmolested, and to die a natural and peaceful death.

With man's advent came a sad necessity; and very soon "the ills that flesh is heir to" perplexed the early world, and clamoured for relief; and so the history of pharmacy makes its starting-point in the grey dawn of human life.

We have no record of the adventurous individual who administered, and the still *more* adventurous and confiding patient who swallowed, the first dose of medicine.

Subsisting almost exclusively on fruits and vegetables, no doubt our forefathers in their search for food, became, by degrees, acquainted with plants or herbs possessing healing virtue, and by slow degrees and a constantly repeated need, some rough rude principles came to be understood, which formed the basis of the science of medicine.

Gathering experience from each other's sorrows, and acting either from individual judgment or the advice of neighbours, a traditional collection of recipes grew up.

Amongst the early Egyptians, to whom belongs the honour of first making an attempt to study and classify the properties of medicines, a custom prevailed of exposing the sick in public places, that amongst the passing throng, some who had themselves suffered, and attracted by that "fellow-feeling which makes us wondrous kind," might suggest a remedy or apply a cure.

Very soon, however, the priests, partly from a superior knowledge, partly from that love of power which *some* amongst their followers retain even in this present year of grace, invited patients to the temples, and, invoking the aid of their gods, became truly the first apothecaries.

In the temple archives a record of the remedies and treatment was kept, and as some of you enter your prescriptions to-morrow, you may find satisfaction in thinking of yourselves, as the followers of the Egyptian priests, ministering in the temple of Serapis.

Three thousand six hundred years ago, we have the fact that spices, balms, and myrrh were carried into Egypt, and it is probable that at this early period—two hundred and fifty years before the birth of Moses—the Egyptians had some considerable knowledge of medicines, and regularly imported odorous and healing gums from India, China, Persia, and Arabia.

In the year of the world 2076, Hermes Trismegistus lived, an Egyptian apothecary and alchemist; his fame was wide, and some early writings on alchemy are attributed to him, the authenticity of which, however, is very doubtful.

In connection with early Egyptian pharmacy, there exists in the museum at Berlin a curious medicine chest or portable surgery, said to have been found in one of the tombs at Thebes, and which is probably as old as the Pyramids; and it is a most singular fact, that the Egyptians very early introduced the specialty system, now so popular in the Metropolis.

Herodotus informs us that there were doctors for the eyes, head, teeth, stomach, etc., and that the lowest order of priests, known as Neocoroi, alone exercised the profession.

Although earliest in the field, the Egyptians were soon distanced, both in skill and knowledge, by the ancient Greeks.

The late Dr. Pereira quotes a classic legend of the early use of hellebore, which may prove of interest to any of my friends present who are like Cœlebs in search of a wife. He says:—"Hellebore was introduced (about 3270 years ago) by Melampus, a Greek shepherd, who is also described as a soothsayer and a physician, and who observed the effects of the plants on goats, which, when sick, instinctively resorted to it. Melampus was applied to by Prœtus, king of Argos, to cure his three daughters of insanity. The princesses, it is said, imagined themselves to be cows, and were running about the fields, and imitating the cries of cattle. Melampus asked a high price for the cure, namely, the third of the kingdom, and the king refused to accede to the terms, until the disease becoming contagious amongst the Argian women, he was obliged to consent. Melampus purged them by hellebore, cured them, and obtained the most handsome of the three for his wife, with one-third of the kingdom as a dowry."

It is as well perhaps that you should be warned not to speak of "vinum ferri" as a *very* recent preparation, as this same Melampus cured Iphides, son of Philacus, by the rust of iron digested in wine; and Dr. Pereira considers this as probably the first instance of the internal administration of iron, now the favourite sport of the inventors of new syrups.

Amongst the most famous of Grecian physicians and apothecaries, may be mentioned Hippocrates, who flourished 460 years B.C., and whose works on materia medica include notices of nearly 40 mineral, 800 vegetable, and 150 animal substances, and who, withal, held fast to the theory of the influence of the stars; advising his son Thessalus to study them, because their rising and setting had a vast effect upon distempers.

But, notwithstanding, his name and his researches remain to us; and the Sydenham Society published some few years ago an edition of the "Genuine Works of Hippocrates." Dr. Adams, in his preface to this work, speaks of him as strictly the physician of experience and common sense; and adds, "Nothing strikes one as a stronger proof of his nobility of soul, when we take into account the early period of human cultivation at which he lived, and his descent from a priestly order, than the contempt which he everywhere expresses for ostentatious charlatanry."

Dioscorides, who lived 54 years before the Christian era, and whose works Pliny quotes, was the author of five books on materia medica, and notices in them no less than 958 various medicinal substances, and for a period of sixteen centuries his writings are said to have been held as the highest and almost sole authority.

The memory of Galen is still held classic and sacred, although he has been buried nearly two thousand years. A shopkeeper in Rome, keeping possibly the first open store for the sale of drugs, he united extraordinary industry and perseverance with amazing powers of mind, and devoted the whole of his life to researches in medical science.

In the temple of Æsculapius diseases and their treatment were recorded on tablets of marble; the medicines being dispensed and prepared by the priests and priestesses, who, at the same time and with vigilant eagerness, collected the fees deposited upon the altar.

At this time opium, squill, lettuce, and cherry-laurel were used, and Dr. Paris mentions that it was probably opium, mixed with wine, under the expressive name of "nepenthe," that Helen administered to the guests of Menelaus, and Dr. Darwin asserts that the Cumean Sibyl never sat upon the portending tripod without first drinking some of the juice of cherry-laurel.

Paracelsus is said first to have publicly burnt, and afterwards attempted to refute the works of Galen; and Scribonius Largos is quoted as the author of the first and original Pharmacopœia, A.D. 40.

Many other names occur in the history of Grecian pharmacy, but I must pass on quickly to reach the more interesting details of modern times.

The Chinese appear very early to have made their mark as pharmacists, and Mr. Morson notices that Chin Nong, coeval with Menes, the first king of Egypt, was a celebrated student, boiling plants and extracting their virtues.

Although somewhat out of proper chronological order, I will call your attention at this point to the present condition of pharmacy in China, and to the model of a Chinese chemist's shop which has been kindly lent me by my friend Mr. Morson, sen.*

The pharmacy is kept in perfect order. Dr. Wilson, in his 'Medical Notes on China,' observes, "That for a small sum, not exceeding in value 1*s.* of our money, the Chinese physician, after examining the pulse and exhibiting profound interest in the condition of his patient, writes an elaborate recipe, comprising seldom less than nine or ten substances, which the druggist dispenses, using different coloured paper for the different ingredients, and honouring those most esteemed by wrapping them in red or crimson. Most of the medicines are given in balls as large as marbles, four or five for a dose; from which it may be inferred that the throats of the Chinese ladies are out of proportion to their toes."

The principal work on Materia Medica in China, is that of Li-shi-chin, in forty closely-printed volumes, and if any of you are curious and wish to spend an idle hour in the study of the celestial language, I am informed that it may be purchased in Canton for about 17*s.* sterling.

Fossil teeth, bones, shells, and crabs figure amongst the remedies in use.

Mr. D. Hanbury, in 1853, exhibited to the Pharmaceutical Society, specimens of two Chinese proprietary or quack medicines, including "frog-juice pills," and gives the translation upon the wrapper, which I will quote:—

"Frog-juice pills,—a panacea for all ills; to stop immediately flatulence, pain in the stomach, heat and burning in the throat and mouth, nervous depression, vomiting, and purging,—take *ten* of the pills and swallow them with warm water.

"Mr. Yaon, of the Key Kwan shop, to the eastward of the magistracy of Canton, respectfully presents the medicine."

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* A model of a Chinese chemist's shop, and a series of interesting drawings illustrating the downward career of a Chinese opium-eater were exhibited, both having been kindly lent for the purpose by T. N. R. Morson, Esq.

The second is, "The sleeping dragon powder, for children afflicted with pain in the bowels, general fever, flatulence, pains in the head with fever, vomiting and purging, also for convulsions and fits when the child writhes about and distorts itself in great degree to the peril of its life, rolling the eyes and twisting the neck: take a little of the powder and blow it up the nose, *and, when the child sneezes*, it will rapidly recover. The civil and ingenious Mr. Yaon respectfully presents this medicine also."

Much more might be written as to the history of pharmacy in the elder world, but I must leave this for other and abler pens, and pass on to notice very shortly the position of our profession amongst the modern nations of Europe, both as an introduction and a contrast to the more important and personally interesting portion of my subject, namely, the past, present, and future of pharmacy in our native land.

And first I take Turkey, as the condition of the science in the Ottoman empire seems to me the most unsettled and irregular.

No efficient law exists, unless of very recent introduction, for the regulation either of medicine or pharmacy, and any person may practise either, at their own sweet will, regardless alike of their own fitness and of the lives of the unhappy Turks.

A large number of men, most of whom have been assistants to German or foreign physicians, practise as druggists and doctors, under the name of "Hekims." Demanding payment in advance and a large deposit on account of future services, if there is the prospect of a lengthened illness, they fatten upon the credulity of the ignorant, and, occasionally have received sums amounting to £400 or £500 of our money for a single cure.

Boxes, bottles, and drawers, entirely innocent of labels, many of them as empty as the heads of their owners, serpents and reptiles displayed in the windows or hung from the roof of the little shops, scores of which may be seen in the streets of Constantinople,—the pharmacy (save the mark) is a fair index to the character of the ignorant quack who keeps it, and whose sole object seems to be to extort as many piastres from his victims as they possess.

Some such a subject must have been in Shakespeare's mind when he wrote his description of the Apothecary in Mantua, and which, familiar as it is, it seems impossible to omit:—

"I do remember an Apothecary,
And hereabout he dwells, which late I noted
In tattered weeds, with overwhelming brows,
Culling of simples; meagre were his looks;
Sharp misery had worn him to the bones;
And in his needy shop a tortoise hung,
An alligator stuffed, and other skins
Of ill-shaped fishes, and about his shelves
A beggarly account of empty boxes,
Green earthen pots, bladders, and musty seeds;
Remnants of packthread and old cakes of roses,
Were thinly scattered to make up a show."

I observe that a correspondent of the 'Chemist and Druggist,' writing from Stamboul only last month, speaks of the Turkish pharmacists in terms which lead me to infer that their greed of gain is as great as ever; but, at the same time, there is evidence of a vast advance in scientific knowledge, as the metric system of weights and measures is to be introduced into the Ottoman empire.

With this exception, almost all the prominent Continental nations appear to have been in advance of our own with reference to the *status* of pharmacists and the regulation of their duties and responsibilities.

The popular notion, dear to the heart of every Briton, that we are the foremost nation in the world, and ever lead the van in progress and reform, receives a rude shock when we find that what after nearly thirty years of unwearied labour has just been accomplished by the Pharmacy Act of 1869, was to a very large extent carried out in Bruges nearly six hundred years ago!

In 1297, Bruges boasts of a body corporate of pharmacists of considerable distinction. Holding their meetings in a spacious hall, and consecrating their labours by daily service in a chapel of their own, they appear to have possessed both influence, wealth, and importance.

In 1497 they were placed under laws regulating their members and qualifications, and somewhat later it was made compulsory that no person should be permitted to practise as an apothecary, or enjoy the privileges of the Corporation, who had not for *three years* previously studied pharmacy, and this was followed by "an Act regulating the sale of Arsenic." Verily, there is nothing new under the sun.

In Belgium, as early as 1641, pharmacy was placed under proper control. None but legally qualified men were allowed either to vend or dispense medicines, and what is more, a *quid pro quo* was given for the restrictive powers exercised by Government; for all surgeons and physicians were debarred from supplying or dispensing medicines. How long *we* shall be in coming to this point I will not venture to predict.

In Portugal, on the 25th of February, 1521, just 350 years ago, the king, Don Manoel, published an edict which defined the duties of physicians and apothecaries alike, prohibiting any subject from keeping open shop for the sale of drugs who had not been examined, and providing for regular visits of inspection to the various pharmacies. And in addition, the conscience of the chemist was taken care of, and the prices to be charged for all medicines were controlled by law.

In Sweden the dispensers of medicine were under the control and inspection of a Council of Health, armed with large powers so long ago as 1663. The Swedish honesty was carefully fenced round, and Government tables fixed the cost of pill and plaster, drops, draughts, or mixtures.

In Poland there appear to be some curious, and what to us would seem oppressive, regulations. Preliminary education, and several classes of examination, are very properly and thoroughly provided for.

But when the Polish youth has passed his minor, and come with flying colours through the still more rigorous horrors of his major, he is permitted to follow his business only under the following regulations:—

"Every prescription must, on receipt, be rated and entered in a book, and the prescription itself numbered according to the apothecaries' protocol. On the white or red label (according as the medicine is for external or internal use) must be marked —besides the directions for use—the number in the book, the name of the patient and of the prescriber, the signature of the assistant who made up the medicine, the price and the date. On the back of the label, a copy of the prescription must be written (the original being retained by the apothecary), and every medicine must be sent out sealed.

Once a year the Director-General of Pharmacy, accompanied by an inspector or assessor, visits the unhappy chemist, and requires the production of his books of business, which are rigidly inspected, and consist of—

1. The protocol or prescription book;
2. The book of sales over the counter;
3. The laboratory ledger;
4. The stock book;
5. The poison book; and

Last. The journal of correspondence with medical and other authorities.

In addition the Council of Pharmacy publishes an annual list of all apothecaries, and a tariff of prices.

As some set-off against his many troubles, the chemist is exempt from military service and taxation, and when old age and "the making of many books" blunt the vigour of his intellect, he is rewarded by a pension, and can study at his ease the early records in his laboratory ledger.

Time will not permit me to make any reference to the condition of pharmacy in France, and I commend its study to any gentleman looking for some interesting subject for a future paper.

You will see, gentlemen, by the very slight sketch I have given you of Continental pharmacy, that we are centuries behind some, and very many years behind all, of our neighbours as to professional status; and were it within my province, it would not be difficult to show that the Germans and French are running a keen race with us, in practical and manufacturing chemistry, and in some of its departments have already distanced us. With your permission we will leave them to their studies, and turn our attention for a while to what I trust may prove more attractive to you all, namely, the past, present, and future of pharmacy amongst ourselves.

I have been unable to find any traditional account even of the practice of medicine by the Celts in Britain.

Possibly some of the Welsh legends may throw some dim light upon the matter, the name Cymri belonging originally to the Celtic tribes, who are supposed to have migrated from Jutland or Denmark.

No doubt the Druids, presiding over the religion of the ancient Britons, interfered in the treatment of disease; and you will remember that when our forefathers were attacked with what appeared to be mortal maladies, human sacrifices were offered to appease the supposed anger of the gods, and at these sacrifices the Druids, of course, presided.

That their knowledge of the principles of some sciences was really much greater than their barbaric practices would indicate, is evident from the stony memorials which to this day puzzle and astound engineers and antiquarians.

Of the art of medicine in the dark ages very little is known; the same shadow rests upon it which covered the whole land.

And of the alchemists it is not my intention to say much, as they are the fathers rather of chemistry than of pharmacy; but it is impossible not to feel and to acknowledge the debt we owe to men who, in the pursuit of a wild vision, struck upon rich mines of knowledge, and whose researches, mixed up although they were with sorcery, superstition, and fraud, lit that lamp which has burnt brighter and brighter through the long ages, until by its wondrous light all nature is illumined, and the very sun itself submits to our gaze and reveals its hidden substance.

It would hardly be right, however, to pass over altogether the name of Roger Bacon, the one true philosopher of alchemy. Born at Ilchester, in Somerset, early in the thirteenth century, we seem to look upon him as a friend and neighbour.

He was, as you are aware, a Franciscan monk, and after visiting France, became well known in England, and especially at Oxford, then the chief seat of learning in the kingdom.

His attempts to refute and expose the ignorance and folly of his age, and to shame the outrageous immorality of the monastic order, cost him very dear, and after long imprisonment, he narrowly escaped being burnt as a magician.

During the feudal ages, the art alike of the physician and apothecary was almost entirely in the hands of women; the few men engaged in it being either clerks or priests. In those superstitious times the "little knowledge which is a dangerous thing," was made into a great power by its possessors; and although all the treatment of the sick partook more of quackery than science, those who undertook it exercised an influence over the bodies and souls of men well-nigh irresistible.

Nor do we wonder to find women engaging in its pursuit with characteristic eagerness. A spiteful writer has attributed this to their love of intrigue, which such a calling would aid and foster.

Possibly a desire for the possession of some magic influence, by which their haughty lords and masters might be effectually humbled, had some share in their calculations, but we prefer to accept the fact as a proof that women have *always been* the true ministering angels, and to think of the earliest predecessors of Florence Nightingale and her sisters, as we think of them, with reverence and with admiration.

The first apothecary of whom any mention is made in our own land, is a certain "Coursus de Gangeland," who, in 1345, was fortunate enough to be called in to attend Edward III. when in Scotland; the king having probably found the mountain air, or the mountain *dew*, too strong for him.

A pension of sixpence per day for life was settled upon the lucky Coursus, and, in addition, his name comes down to us as the oldest styled apothecary.

It is somewhat curious that this same year, 1345, is named as being the year in which the first apothecary's shop was opened in London. Whether our friend Coursus left Scotland never to go "back again," and set himself forth in the Metropolis as apothecary—on the establishment—to "His Majesty King Edward the Third," I do not know. There does not appear to have been any control, however, over De Gangeland and his colleagues; the practice of medicine was, at this date, wholly unregulated, and it was an even chance whether patients were cured or poisoned, perhaps with a slight balance in favour of the latter probability.

It was not until the time of Henry VIII. and his superb premier, Cardinal Wolsey, that any special examinations were appointed or privileges allowed.

In 1511, Thomas Lineacre, a celebrated physician, procured from the errant king a royal edict, in which it was decreed, that no subject should practise physic in London, or within seven miles thereof, who had not been examined and approved by *the Bishop of London and the Dean of St. Paul's!*

The preamble of the original Act gives us a clear idea of the chaotic condition of pharmacy at this date, and fully justifies the clerical interference. It says, "Before this period a great multitude of ignorant persons, of whom the greater part had no insight into physic, *nor into any kind of learning;* some could not even read the letters and the book,—so far forth, that common artificers, as smiths, weavers, and *women* (unkind cut), boldly and accustomably took upon themselves great cures, to the *high displeasure of God*, great infamy to the Faculty, and the grievous hurt, damage, and destruction of the King's liege people."

Rapidly following upon this, and, no doubt, at the instigation of Lineacre, who lived to be of service to Edward VI. and Princess Mary, the physicians were incorporated in 1518, and their college founded. Lineacre became its first president, and the meetings were originally held at his house, 5, Knight Ryder Street, Doctors' Commons. (A lesson to ourselves, gentlemen, not to despise small beginnings.)

The surgeons seem to have been left out in the cold; but about twenty years afterwards (in 1540), they also were incorporated; and as there appeared to be some connection between the knife of the surgeon and the scissors of the barber, the two professions were connected, and the barber-surgeons continued to amputate legs and locks for many generations.

This legislation did not by any means prevent large numbers of outsiders from practising medicine. These interlopers were so numerous and important, that it soon became needful to look after them, and accordingly, in 1543, a curious "permissive bill" was passed, entitled, "An Act that persons, being no common surgeons, may administer *outward* medicines."

All those irregulars who kept open drug-shops, etc., were included; and here, at last, after a long and tiresome journey, I have brought you to your own beginnings; for in these gentlemen, permitted to "minister outward medicines," in the sixteenth century, you have the true predecessors of the Pharmaceutical Chemists permitted to deal in poisons in the nineteenth. They were recognised generally as apothecaries, and it is gratifying to know, that some of them, at least, appear to have been decent and kindly souls, for the permissive Act gives them great praise for their treatment of the poor, many of whom they seem to have attended upon without fee or reward, giving both advice and medicines gratis; and their conduct is placed in striking contrast to that of their more learned and avaricious rivals, the physicians and surgeons.

Matters remained in this condition until the time of James I.; and then, in 1606, the apothecaries were first constituted a corporation, only, however, in connection with the grocers, and hence they became known as spicers.

This ill-assorted marriage lasted only a few years, and, in 1617, the grocers were divorced, and the apothecaries became a distinct body under the title of The Master, Wardens, and Society of Apothecaries in London.

No doubt it was intended originally that their office should be limited to the preparation and dispensing of medicines; but finding this brought them either too little honour or too little profit, they presently began to visit and prescribe, and there arose at once a fierce controversy between themselves and the physicians, which produced a paper war, worthy of a Bristol election.

The physicians, enraged at the rapid popularity and success of the apothecaries, and plotting to destroy their gains, whilst, at the same time, courting public favour for themselves, established dispensaries, at which the poor might obtain medicine and advice for nothing. It may be conceded that the object was twofold, and that, with a large quantity of spite, there was mixed up a handful of benevolence; but there can be no doubt, that the foundation of the useful institutions which now grace our land, was laid by the jealousy of the London physicians, who saw their position imperilled, and their fees melting away. The apothecaries offered a compromise, but were quickly repelled, and fifty members of the College of Physicians subscribed £10 each, and opened a dispensary in Warwick Lane.

This famous dispute raged for many years, and produced a host of books, pamphlets, and poems, the most noted being the work of Samuel Garth, then a young physician just admitted Fellow of his College.

As in most other quarrels, there were grave faults on both sides, but, for a time, Garth's bitter satire covered the apothecaries with confusion.

Dr. Arbuthnot expressed his contempt for them in an elaborate essay, in which he scorns their "pedantic dressing of their discourse in the language of the faculty," and says, "At meals they distributed their wine with a little lymph, *dissected* a widgeon, cohobated a pease-porridge, and amalgamated a custard. A morsel of beef was a bolus, a grillard was scarified, eating was mastication and deglutition; a dish of steaks was a compound of many powerful ingredients; and a plate of soup was a very exalted preparation. In dress, a suit of clothes was a system, a loophole a valve, and a surtout an integument. Cloth was a texture of fibres spread upon a drab or kersey; a small rent in it was cutaneous, a thread was a filament, and the waistband of the breeches was the peritoneum."

As an indication of the position of the apothecaries at this period, I cannot do better than quote William Bulleyn's rules for an apothecary's life and conduct.

"THE APOTICARYE.

"1. Must fyrst God, forsee the end, be clenly, pity the poore.

"2. Must not be suborned for money to hurt mankynde.

"3. His place of dwelling and shop to be clenly to please the sences withal.

"4. His garden must be at hand with plenty of herbes, seedes, and rootes.

"5. To sow, set, plant, gather, preserve, and kepe them in due tyme.

"6. To read Dioscorides, to know ye natures of plants and herbes.

"7. To invent medicines, to chose by colours, tast, odour, figure, etc.

"8. To have his morters, stilles, pottes, filters, glasses, boxes cleane and sweete.

"9. To have charcoales at hand, to make decoctions, syrupes, etc.

"10. To kepe his cleane ware closse, and cast away the baggage.

"11. To have two places in his shop; one most cleane for the phisik, and a baser place for the chirurgie stuff.

"12. That he neither increase or diminish the phisician's bill (or prescription), and kepe it for his own discharge.

"13. That he neither buy nor sell rotten drugges.

"14. That he peruse often his wares, that they corrupt not.

"15. That he put not in *quid pro quo* (*i. e.* use one ingredient for another) without advysement.

"16. That he may open wel a vein for to helpe pleurisy.

"17. That he meddle only in his vocation.

"18. That he delyte to reede Nicolaus Myrepsus, Valerius Cordus, Johannes Placaton, the 'Lubik,' etc.

"19. That he do remember his office is only to be ye phisician's cooke.

"20. That he use true measure and waight.

"And, last, To remember his end, and the judgement of God. And thus I do comend him to God, if he be not covetous, or crafty, seeking his own lucre before other men's help, succour, and comfort."

These excellent rules serve to show the light in which the apothecaries were held in the Elizabethan age. Evidently they were expected to humble themselves before the lordly physicians, many of whom, although members of the college, were little better than arrant quacks. Keeping their most curious and powerful recipes a secret, they vended them as nostrums, and in the reign of Charles II. many physicians realized large sums by opening, advertising, and selling their secret remedies. Doubtless some of the oldest patent medicines still in vogue could be traced back to this period. The Court physician, Sir Theodore Mayerne, was celebrated for his "balsam of bats," strongly recommended as a specific against hypochondriasis. It was composed of *adders, bats, sucking whelps, earth worms, hog's grease, the marrow of a stag, and the thigh bone of an ox.* The doctor also served his generation by the introduction of an infallible remedy for canine madness, and wrote several elaborate works upon the virtues of amulets and charms.

To this same period belongs a once famous apothecary, Colonel Delmahoy, who, it it is said, wore one of the most extraordinary and magnificent wigs on record.

He kept a shop in Ludgate Hill, close to the Warden's Hall, where he appears to have driven a thriving trade, and to have supplied the ancient citizens of London with sweetmeats, hair washes, scents, pomades, medicines, love drops, and charms. A comic critic wrote for him an epitaph worth quoting.

"Delmahoy sold infusions and lotions,
Decoctions and gargles and pills;
Electuaries, powders, and potions,
Spermaceti, salts, scammony, squills.

"Horse aloes, burnt alum, agaric,
Balm, benzoine, blood-stone, and dill;
Castor, camphor, and acid tartaric,
With specifics for every ill.

"But with all his specifics in store,
Death on Delmahoy one day did pop;
And, although he had doctors a score,
Made poor Delmahoy shut up his shop."

(To be continued.)

GOSPORT CHEMISTS' ASSOCIATION

At a meeting of this Association held on the 12th of January, it was unanimously resolved to suggest the adoption of "a universal poison label," to be used by the trade generally.

It was urged that poison bottles do not and will not answer the purpose intended, because bottles of all shapes and colours are used for other purposes than for containing poisons; and that, even if a bottle of some particular shape and colour were restricted in its use to poisons, it would be impossible to maintain this restriction; whereas a universal poison label would soon train the public mind to a recognition of the fact that this always meant danger, and there would be no difficulty in confining its use to really dangerous substances.

HALIFAX AND DISTRICT CHEMISTS' ASSOCIATION.

The following resolutions, relating to the proposed new regulations for the sale of poisons, were passed at the March meeting of the above Association:—

Proposed by Mr. Stott, seconded by Mr. Shaw, and supported by Mr. Jessop,—

1. This meeting is of opinion that the three systems for the safe keeping of poisons as proposed in the second regulation, should be left to each individual chemist to adopt as circumstances may require, and should only apply to the stronger and more dangerous poisons in small quantities, and is further of opinion that the third regulation is quite impracticable, impossible to carry out, and would defeat its own end.

2. That the *recommendation* of the Council to the chemists to carry out the regulations would be amply sufficient for the end in view, without attempting to give them the force of law, against which proceeding this Association most strongly protests, as well as the subjecting chemists to visits of inspection.

Carried unanimously.

At a General Meeting of the above Association, held at the Mechanics' Institute, Feb. 11th; Mr. Dyer, President, in the chair,—

Mr. Shaw repeated, in compliance with the expressed wish of some members of the Association, the paper on the study of Materia Medica which he had previously delivered to the assistants and apprentices engaged in this district. Having defined materia medica as distinguished from therapeutics, the distinctive positions and mutual relations of the medical practitioner and the pharmaceutist in regard to these branches of study were noted. The chemist, it was observed, ought to have an extensive practical and scientific acquaintance with the former; and, to be of service to the medical man, he should also possess a knowledge of the general action of drugs. Both should be capable and willing to co-operate, the one to prescribe and the other to supply suitable pharmaceutical preparations of drugs for the prescriber. This was conceived to be their true relation. In beginning to study materia medica they had to do, for the most part, with accurately ascertained facts, and not with theories; hence the value of system. Based on this plan, an elementary epitome of the more important facts was then explained, and illustrated in the case of the sennas, opium, and the cinchona barks. The advantages of such a plan were pointed out, and an extract from an authoritative paper of advice to students, as well as the requirements for the Minor and Major examination in materia medica, were read, to show these still further. Some general remarks on the three divisions usual in manuals on the subject, as well as warnings against coaches and coaching-books and cramming, led to still more minute directions as to the manner in which the study of the various subjects should be conducted; and students were encouraged, because of the ease and interest attaching to the method of beginning to acquire drug lore, to persevere till they had qualified themselves to pass with honour and credit those ordeals through which they must now pass. Careful reperusal of work previously done, deliberate progress, the use of physical exercise, the necessity for change and recreation, were recommended as general principles on which all true study should proceed.

The President then dilated on the principal points of the paper.

Mr. Stott (Sowerby Bridge) proposed, and Mr. Jessop seconded, a vote of thanks to Mr. Shaw for his paper.

Mr. Farr, in supporting, said he had listened with pleasure to the able manner in which the lecturer had simplified the study of materia medica; and he felt sure that if their assistants and apprentices followed out the method as now laid down, they would easily surmount every difficulty. The facilities for study were vastly different now to what they were during his apprenticeship. Then the principals looked with a very discouraging eye on such pursuits; now the Assistants had every opportunity and encouragement.

Mr. Shaw then introduced the subject of the "Dispensing and Storage of Poisons." He read the three propositions which have been drawn up by the Pharmaceutical Council for approval at the annual meeting in May.

A desultory conversation followed, in the main opposed to the late proceedings of the Council, which were thought to be rather arbitrary. The subject was then adjourned till next meeting.

A Meeting of the Members of this Association was held at the Mechanics' Institute, March 11th; Mr. Stott (Sowerby Bridge), Vice-President, in the chair, who briefly introduced the subject of the meeting, viz. "The consideration of the proposed Regulations of the Council of the Pharmaceutical Society for the Storage and Dispensing of Poisons." On which,

Mr. Brook read a paper. He observed that the Council, having decided to recommend to the consideration of the members the precautions to be observed for the safe storing and dispensing of the more generally used poisons, it was important that the subject should be thoroughly discussed. He said the Sale of Poisons Act was sufficiently intricate without adding thereto further provisions. There was plenty of work for the Council before the Act would produce those benefits the trade had been taught to expect; and he would certainly deprecate anything further than practical recommendations for the consideration of the whole trade. He thought there were no great objections to Regulation No. 1, except the vagueness of the term "poison." The definition of the term would have great effect on the practicability of Regulation No. 2. It would require a large cupboard to hold all the preparations, whilst some poisons equally dangerous would be at large. Fresh additions to the Schedule would be made, until it would involve an incalculable amount of trouble and expense. Then, no reference had been made to quantities. How were 1 cwt. of arsenic and large quantities of opium to be kept? At least 100 preparations would be affected by these Regulations. Had the Council, as a trial, confined themselves to the poisonous alkaloids, prussic acid, etc., the project would have been more reasonable. The plan of coating bottles with sand-paper, also that of capping the bottles, was then referred to, —the latter the speaker considered to be the more effectual. The endeavour to effect the safety of poisons in the hands of the public by sending out poisons in peculiar-shaped bottles he thought would fail, as the bottles would soon come to be used for ordinary medicines. Then, again, a large number of prescriptions for internal use contained one or other of these poisons; should these mixtures be put into peculiar-shaped bottles? If so, what was to distinguish them from liniments, etc.? The question to be considered was whether the precautions were needed, and, if so, would the Regulations of the Council meet the case? In the opinion of the speaker, the outcry was unreasonable. The mistakes made by the trade bore a small proportion to the fatal list, as would be seen from the following statement, which had been published. Out of 301 cases of poisoning, 160 were accidental, 84 suicidal, 31 homicidal, and 26 traceable to mistakes of the vendors of medicine. It would be interesting to analyse these 26 cases, in order to see how many could have been prevented by the proposed Regulations. In conclusion, Mr. Brook said he had freely expressed his opinions, and trusted that the opinions of his audience would be equally free; for, if the Council carried their plan, the trade would have only themselves to blame in not having protested against an intolerable project.

The CHAIRMAN then invited the members to thoroughly discuss the subject; it was a matter in which none of them could afford to remain silent.

Mr. SHAW complimented the essayist on the able manner in which he had handled the subject. He thoroughly agreed with the opinions expressed. In his opinion, the safety of the public could best be guaranteed by the pushing forward vigorously the education of the trade. The Council would have sufficient work on its hands to give this matter the consideration it deserved. He attributed the present agitation to the gradual leaning of the ruling powers of the Society towards the whims and desires of the faculty. The more active poisons in his establishment were very conspicuously marked with a red band, and every other precaution adopted to prevent mistakes. The technicalities which the trade had to contend with were already sufficiently annoying.

Mr. FARR thought that tying the dangerous medicines over would be the best preventive to mistakes; the time in untying the cover, and its peculiar difference to the other bottles, must at once attract the attention of even the most careless dispenser. He thought the cupboard a cumbersome and impracticable idea.

Mr. JESSOP said the Council should pay attention to the register, and see that all who were on it were worthy to be so. The health of the public could not be safe, nor would the trade prosper, so long as they had to compete with those who had no genuine qualification.

The discussion was continued by Messrs. WRIGHT, WOOD, BREARLEY, etc. etc., who agreed with the remarks of the preceding speakers, and thought that the object of the Council was a laudable one, but impracticable.

The Secretary, Mr. HEBDEN, was somewhat disappointed with the discussion. He had hoped that, while the plans of the Council had received the condemnation they merited, some other plan, simple, practical, and inexpensive, might have been originated amongst them. All, however, seemed only bent on censuring these methods for accomplishing a good end. The safety of both the trade and the public would be secured if the agitation on this subject should result in a real improvement in the direction in which our governing powers wish. Whilst agreeing with the expressions in opposition to the proposed Regulations, he could not forget that a vast proportion of the dispensing was done by the assistants or senior apprentices, and that lads fresh from school, in the first year of their apprenticeship, were daily able to plunge a family into ruin. The speaker then referred to the proposed means for labelling and securing poisons.

The **Chairman**, in summing up the discussion, expressed the pleasure he felt in hearing the Society spoken of in terms of the greatest respect by all; he agreed with the opinion that medical men had influenced both this and other matters which the Council had recently taken in hand, and he would be sorry to see them lean towards such quarters; by so doing they would lose that respect and confidence which they now had; in his opinion if any care was at all required in the dispensing of medicines, it was in surgeries. If the plans of the Council received the sanction of the members and the Privy Council, they would have official inspection, and he would sooner at once retire from the trade than tolerate such an insult. As for the grouping of powerful remedies, the danger would be increased rather than diminished. The best thing the Council could do, would be to draw up some plain sensible plan on a small scale for a trial, say poisonous alkaloids only, and appeal to the trade; they would receive that respectful consideration and support which would give confidence for further efforts. The present plan he protested against, and submitted to the members the following resolutions, which were seconded by Mr. **Shaw**, and supported by Mr. **Jessop**:—

"1st. This meeting is of opinion that the three systems for the safe keeping of poisons as proposed in the second regulation, should be left to each individual chemist to adopt, as circumstances may require, and should only apply to the stronger and more dangerous poisons in small quantities, and is further of opinion that the third regulation is quite impracticable, impossible to carry out, and would defeat its own end."

"2nd. That the urgent recommendation of the Council to the chemists to carry out any regulations, would be amply sufficient for the end in view, without attempting to give them the force of law, against which proceeding this Association must strongly protest, as well as subjecting chemists to visits of inspection."

Carried unanimously.

LEEDS CHEMISTS' ASSOCIATION.

The ordinary Monthly Meeting was held on February 18th, at the Church Institute; the President, Mr. **Smeeton**, in the chair.

Donations were announced of a Medico-Botanical Map of the World, and a Set of Instructive Labels for Drugs, from Mr. G. Barber, of Liverpool, and the 'Directory of Chemists and Druggists,' from the Hon. Sec., Mr. Yewdall.

Mr. **Samuel Taylor** read the paper of the evening, entitled, "Some Articles in Every-day Request." Mr. Taylor selected a few substances daily passing through the hands of the chemist, and gave a sketch of their source, natural history, various qualities, and adulterations. Most of the illustrations were taken from the large and extending class of dietetic substances which now find a place in the equipment of a chemist's shop.

After a discussion, the thanks of the meeting were offered to Mr. Taylor for his interesting paper.

The ordinary Meeting was held on March 9th; the **President** in the chair.

Mr. W. G. Clarke was elected an Associate.

The **Hon. Secretary** read a communication from the Manchester Chemists and Druggists' Association on the subject of the proposed regulations for keeping, selling, and dispensing poisons, which it treated as presenting some objectionable features.

The **President** (Mr. Smeeton) introduced laboratory notes on two subjects. The first was linimentum potassii iodidi cum sapone, several specimens of which were shown, made with different varieties of hard soap, and presenting great difference in their characteristics; the second subject was chloral hydrate, the production of which was described through its various stages; and specimens of each of these were exhibited.

According to previous arrangement, Mr. **Edward Thompson** then brought under the consideration of the meeting the proposed regulations for keeping, selling, and dispensing poisons which are to be submitted to the next Annual Meeting of the Pharmaceutical Society. Mr. Thompson laid down certain general principles in favour of liberty in preference to needlessly fettered action, and expressed his fears at the present tendency to over-legislation. With regard to laws only imperfectly observed it was evident that they were especially to be deprecated, since advantage was taken of them by the unscrupulous. The present scheme for giving security was entirely mechanical, and took no cognizance of that much more efficient safeguard from error, viz. the trained habit of carefulness which should be one of the most important fruits of our educational arrangements. To some portions of the regulations there were very grave objections, as, for instance, the enforced use of distinctive bottles for liniments, etc. Now, this would not extend to medicines dispensed by medical practitioners, and hence it might fairly be considered as likely to cause accident rather than avert it. Mr. Thompson concluded by reminding his fellow-members that in past years they had successfully resisted the imposition of unreasonable restrictions upon the sale of poisons, and asked if they were now willing to bind this grievous burden upon their own shoulders?

He moved the following resolution, which was seconded by Mr. Abbott, and carried with one dissentient;—

"That this association protests against the recent proposal to make any special methods of storing and dispensing poisons binding upon chemists, believing that such legislation is altogether unsuited to a body of educated men, already abundantly responsible, and that it would also be useless to the public."

Mr. R. Reynolds strongly condemned the proposed regulations, and moved the following resolution, which was seconded by Mr. Yewdall, and carried unanimously:—

"That the committee draw up a memorial to the Council of the Pharmaceutical Society, protesting against the proposed compulsory regulations for the storing and dispensing of poisons, adding their reasons for dissent therefrom, and that they take steps to procure for the memorial signatures of chemists and druggists in the town and district."

In compliance with the resolution of the last monthly meeting, the committee met at the library of the association on Thursday, March 17th, when a memorial to the Council was drawn up, and the following statement of reasons was unanimously agreed to. Arrangements were made for a canvass of the town to procure signatures to the memorial.

A Statement of Objections to the Proposed Regulations for Keeping, Selling, and Dispensing Poisons, to accompany the Memorial to the Council of the Pharmaceutical Society, from the Chemists and Druggists of Leeds.

"1. That in the business of chemists and druggists in provincial towns the stock of poisons comprises supplies kept in the shop itself, and reserves stored in a warehouse, cellar, or other rooms. The regulations would equally apply to all 'poisons' under whichever of these circumstances, and they would in many cases deal with large quantities in the hands of persons who were retail traders.

"The option offered by the regulations would fail to afford reasonable facilities for keeping such reserves, since aconite, belladonna, and ergot of rye require to be kept under special conditions as to dryness, whilst it might be very inconvenient to keep other 'poisons' in the only part of the premises meeting this requirement.

"Further, that the option of peculiar bottles, and of bottles tied over in a peculiar way, would be inapplicable to many solid 'poisons,' and consequently that there is no choice of methods of storage in such cases.

"Further, that in the case of such liquid 'poisons' as syrup of poppies, compound tincture of camphor, etc., no bottles answering the requirements of the regulations, and at the same time capable of storing such a quantity as a few gallons, are procurable.

"Finally, the regulations do not, and probably cannot be made, to define any exemption of wholesale traders, and yet it is evident they are quite unsuited to such members of the trade.

"2. That the selection of a peculiar bottle which could be distinguished by the sense of touch was originally proposed for dispensing bottles to prevent mistakes on the part of ignorant, careless, or exhausted nurses, perhaps in a darkened room, or having to attend to the sick during the night.

"But the argument is not applicable to the legally qualified chemist and druggist, who does not carry on his business under similar disqualifications.

"3. That a variety of lozenges, pills, etc., may still be considered as legally within the definition of 'poisons,' notwithstanding an opinion obtained through the Privy Council, and it is manifestly undesirable to further hamper the trade in these.

"A law not carried out is not only inoperative but mischievous.

"4. The compulsory use of peculiar bottles for dispensing liniments, etc., does not appear to be deprived of its harshness by the words 'or bottles made distinctive,' since the use of a roughened label, if not brought into contact with the person handling the bottle, could not be regarded as reasonably 'distinctive.' Those who have but little dispensing would be often placed in the position which their more favoured brethren would not unfrequently have to deprecate, in not having suitable 'distinctive' bottles for some liniment or lotion. The discredit of having made a blunder would be the penalty for using a 'distinctive' bottle not suited in size to the prescription.

"5. The regulation as to dispensing liniments, etc., in 'distinctive' bottles would be supposed to have the universal application of a Parliamentary enactment. Now, in our own town, by far the largest portion of the medicines dispensed come from the surgeries of medical practitioners, who would be exempt from regarding the regulations.

"We therefore view with much alarm the attempt to give the weight of legal authority to such a regulation, and believe that accidents would be caused rather than prevented by it.

"In connection with the extensive reliance upon *mechanical* safeguards which forms the basis of the regulations, it is to be noted that the list of legally defined 'poisons' does not by any means comprehend all preparations liable to serious mistake in dispensing: thus, tincture of digitalis and tincture of colchicum are excluded; and, whilst the dispenser may now treat them in a precautionary manner, he would be committing a breach of the law if he adopted towards them any of the three methods of dealing with poisons prescribed by the regulations.

"7. The compulsory use of the word 'poison' upon all such preparations, if to be carried out in a *bonâ-fide* way by labelling the fronts of the bottles, would usually compel us to remove them from our shelves. We believe that a 'distinctive' label, both in keeping and dispensing 'poisons,' is a reasonable security, and it ought not to be assumed that a dispenser ever fails to look at a label.

"8. It is not to be supposed that a fine of £5 would be the only penalty imposed for the breach by an apprentice or assistant of the most trivial of the 'regulations.'

"The discredit attaching to a legal conviction might so damage the reputation of a chemist and druggist as to cause his ruin.

"We hold that no sort of obligation rests upon the Pharmaceutical Society to make such enactments in the interest of the State.

"The Society is carrying out earnestly and efficiently the educational functions which it undertook when Parliament conferred upon registered chemists and druggists their present rights and privileges.

"The Society has also amended and enlarged the Poison Schedule which formed part of the Act. It cannot be a duty that we should place upon our own necks a grievous burden, which is not demanded by the State nor by any class of our fellow-citizens.

"It is to be noted that no advantages or rights would be conveyed to us for accepting these new responsibilities, and we believe that there is no precedent of a body of men asking to be allowed so to trammel their freedom.

"9. So long as Lord Campbell's Act remains unchanged, we view with alarm such stringent and easily broken regulations, which would fix the stigma of aggravated circumstances upon any one who unfortunately made a mischievous mistake."

LIVERPOOL CHEMISTS' ASSOCIATION.

Ninth General Meeting, held at the Royal Institution, February 17th, 1870; the President, Mr. J. Abraham, in the chair.

After some formal business, the President asked Dr. Carter if he had observed, or heard of any new facts with regard to chloral?

Dr. CARTER said that it was being extensively used, and in large doses, but that the results obtained were not at all uniform, and it was evident that much careful investigation would be required before its effects could be relied on.

A MEMBER asked if a prescription containing poisonous drugs should be entered in the name of the patient or that of the messenger or person to whom the medicine was delivered? The Act seemed to require the latter, but the practice was always to give the patient's name.

The PRESIDENT said that the question was one worthy of consideration, but that he could not give a positive reply to it. He then called attention to the new poison schedule, and regretted the great increase under the head of preparations.

The SECRETARY spoke of the open way in which savin was sold by herbalists, and thought some action should be taken to prevent such sale.

The PRESIDENT then called upon Mr. CHARLES SHARP to read a paper on "Two Centuries of Patented Inventions in Physic and Pharmacy."

"In glancing over the specifications of the inventions in physic and pharmacy patented during the last two centuries, it is evident that the most useful discoveries never forced themselves upon the attention of the Patent Office. One looks in vain for chemical and other processes with which the names of eminent men are connected; for, as a rule, these have appeared in scientific journals, and have been handed over to mankind without any restrictions.

"The earliest patented invention connected with the healing art was that of a 'moveable hydraulike,' which caused 'sweet sleepe,' by moistening and warming the atmosphere of the sick-room, and by emitting 'sweete sounds.' No draughtsman has had the courage to depict this machine, invented by Thomas Greut. It was, probably, a combination of a steam-chest and a musical-box, the effects of which upon a feverish patient may be more easily imagined than described.

"The first chemical process was patented by one Thomas Moore in 1685, and was entitled, 'A way for makeing better allom and in a cheaper way than is used or ever was at any such work,' etc. As T. Moore omitted to enrol his specification, there is now no saying what his process was. We can, however, judge of its usefulness from the author's assertion that it was for the 'public good, for medicinal, chirurgical, mettallick, and mineral improvements.' About thirteen years after this, Nehemiah Grew patented his process for 'makeing the salt of purging waters perfectly fine in large quantities and very cheap,' etc. In this case also no specification was enrolled.

"Besides these patents there are none recorded as having been taken out in the seventeenth century, which are not of the purest quackery. And it is not at all to the credit of the eighteenth century that the first medicinal patent registered in it was avowedly one of a quack preparation. The enterprising patentee, Timothy Byfield, was succeeded by other equally inventive minds, restless till they had furnished his Majesty's subjects with patent medicines. Every page of the Patent Office Abstract contains a 'specifick pill,' a dropsy tincture, a 'Greek water,' or an 'elixir;' and as we go over these, we cannot but deplore the gullibility of human nature, as well as the fact, that the Government should have enriched itself by the registration of such abominable absurdities. It is a positive relief when, in the middle of the eighteenth century, we come to John Wilkinson's invention of prepared medicated baths on frames, so that patients could float on the river Thames or elsewhere. Other medicated baths followed in which sick men were parboiled and dried, ridden upon a wooden horse, and rubbed with emollients and aromatics; after which come wooden legs, and 'a process for making false or downy calves in stockings, a thing before never put in practice.' Wandering through these early patents is profitless and weary labour. Impossible ingredients are introduced. Processes are complicated and drawn out in a variety of ways calculated to mystify the reader. Patentees used a language of their own, and the maker of abstracts is constantly obliged to resort to the use of inverted commas, in order to show the impossibility of making sense of the specification.

"It is, however, refreshing to find that soon after Mr. Ching patented his celebrated worm lozenges, the Patent Office had reason to alter its opinion of physic and the inventions relating thereto.

"The present century opened with the patenting of Savigny's tourniquets; and in the midst of the descriptions of such preparations as one which enumerates as its ingredients ninety-eight British herbs, are many specifications of valuable inventions. A curious collection is that which refers to the cure of sea-sickness, sometimes by the most astounding mechanical inventions, at others by the use of medicines more likely to cause the disorder than to produce it. The processes for the production of anæsthesia are also of a remarkable character, consisting, in most cases of the use of freezing mixtures. For the treatment of cod-liver oil in numerous ways, there are many patents. Pill-making and pill-covering also claim many specifications. Very little pharmaceutical apparatus appears to have been registered."

After alluding in detail to a number of inventions, the author concluded by saying, that in going over the abstracts of specifications, two facts had forcibly obtruded themselves upon his attention. First, that there are to be found scattered through the professional and scientific journals far more inventions of value than have passed through the portals of the Patent Office. Secondly, that the majority of patents are examples of egregious folly, and never ought to have been patented at all.

Mr. Redford wished that the Government stamp could be done away with, as it gave a kind of prestige to quack medicines, and, also, that the licence to deal in them should be abolished. He thought Government should not recognize such medicines at all, and, still less, raise a revenue from them.

The President opposed the abolition of the stamp, as he feared that many chemists would then be bringing out nostrums whom the duty now restrained. The stamp is also a guarantee to the purchaser that he gets what he asks for.

Mr. Tate would have an investigation made into the properties and composition of medicines before granting a stamp. He proposed a vote of thanks to Mr. Sharp.

The Secretary seconded the vote, which was carried unanimously.

MANCHESTER CHEMISTS AND DRUGGISTS' ASSOCIATION.

The Fifth Monthly Meeting of the session was held in the Memorial Hall, Albert Square, on Friday evening, March 4th. Tea and coffee having been served, Mr. Councillor Brown, Vice-President, took the chair. Four new Members and one Associate were elected. The sub-committee appointed at the February meeting then presented the following resolution, which had been unanimously adopted by the Council on February 21st:—

"That, in the opinion of this Council, legislation as to the keeping and dispensing of poisons is unnecessary and undesirable; a well-digested plan, if issued by the Council of the Pharmaceutical Society as a *recommendation*, would be generally accepted, and meet all present requirements."

Copies of this resolution had been forwarded to nearly all the Chemists' Associations in the North of England, and the unanimous opinion received had been in favour of its adoption.

It was then resolved by the meeting that the above resolution be forwarded to the Pharmaceutical Council, accompanied by a letter enumerating the reasons for its adoption, the chief of which were the following:—

"That accidents arising from mistakes in dispensing are not sufficiently numerous to call for legislative interference."

"That legislation would be inoperative unless accompanied by systematic inspection, which would be very objectionable."

"That medical men in whose hands the greater part of the dispensing remains, would be unaffected by the proposed regulations."

"That if the penalty now attaching to want of due care, involving as it does not only pecuniary responsibility for damage, but ruinous loss of reputation, does not induce sufficient care, no legislative restriction would avail with the negligent, whilst the trade at large would be hampered and annoyed by unnecessary regulations."

Mr. B. Robinson then read his paper on "Late Hours of Business, and the Effect of such on the Progress of Pharmacy." After reviewing the improved arrangements made in most businesses and offices during the past few years, by which the hours of labour have been reduced, Mr. Robinson said the chemist and his assistants remained almost as hard worked as ever. Beyond saying that custom excuses custom, that it is so because it has been so, there is very little to be said for the existing condition of affairs. Chemists ought, indeed, to have led the way in this reform. The draper might excuse himself for keeping his shop open till a late hour, with the plea that people were tempted to buy things for which they had no immediate requirement, and which they would not purchase if the opportunity had not been given them just when they were in the humour. From this point of view there are reasons why the chemist's shop should be closed even whilst his neighbours' were open. He would put aside as not worth considering, the convenience of those who delay their shopping until a late hour; those who could obtain what they want at six o'clock, but postpone their visit till nine or ten, are, after all, a pliable people, and would soon conform to a new custom; they do not want us to keep open till ten o'clock, they only take advantage of the arrangements we have made. If the common argument that the chemist keeps his establishment open late to supply sudden emergencies, proves anything, it is that he should never close at all; he has no more right to close at ten than at eight; it is no greater hardship upon one suddenly attacked with illness at eight o'clock to reach his chemist by his night bell, or through his private door, than it is now on such a one at midnight. Having described the better arrangement of business hours in chemists' shops in Germany, Mr. Robinson strongly urged the necessity of making some efforts in the interest of pharmaceutical advancement to afford more time to Assistants and Apprentices for the prosecution of their studies.

A vote of thanks to the author of the paper was very warmly carried, more especially by the junior portion of his audience.

The last meeting of the session will be held on Friday evening, April 1st. Coffee at 7 P.M.

NOTTINGHAM AND NOTTS CHEMISTS' ASSOCIATION.

The Fourth Meeting of the Session was held at the Exchange Rooms, on Friday evening, February 11; the **President** in the chair.

After the preliminary business, Mr. **Atherton** read a paper on "Accidental Poisoning and the Various Means Adopted for its Prevention, with special reference to the proposed Regulations of the Pharmaceutical Society." Upon the table were exhibited the various forms of bottles and appliances which have been at different times introduced for this purpose. A long and animated discussion followed, which was adjourned to the next meeting.

The Fifth Meeting of the Society was held at the Exchange Rooms, on Friday evening, March 11; the **President** in the chair.

After the usual business, the **President** announced that the Materia Medica and Pharmaceutical Chemistry Class would cease on Monday, the 21st March, and that the examination for the prizes would take place on the following Monday, at the Rooms of the Society. He also announced that arrangements had been made with Mr. Burnie to give a course of Lectures on Elementary Botany, commencing on Tuesday, April 5, to be continued through the Session; and also that the Latin Class for Associates would be resumed by Mr. Cockayne, at the usual time and on the same terms.

The adjourned discussion on the poison regulations was commenced by a brief *résumé* by the **President** of the facts elicited at the last meeting. After a long discussion, the following resolution was agreed to, and was ordered to be forwarded to the Pharmaceutical Council:—

"That this Association is strongly averse to the proposed compulsory regulations as to the keeping or dispensing of poisonous substances; believing that the trade generally already adopt sufficient care and precaution in their arrangements."

A matter of some considerable importance to the trade was brought forward, namely, the issue of catalogues, not only of surgical instruments, but of many druggists' sundries, by Messrs. Maw, Son, and Thompson, to the medical profession throughout the country, at prices identical with those sent to the trade. Great indignation was felt and expressed by the meeting at the course adopted by this house, which, more than any other, receives the support of the chemist.

A cordial vote of thanks was proposed to the President for the paper he had read, which was carried unanimously.

SCARBOROUGH CHEMISTS' ASSOCIATION.

During the past winter a meeting of the Scarborough chemists was convened to consider the half-holiday question, at that time prominent in the town. They then agreed to close their shops every Friday afternoon, until a date agreed on, from 2 to 6 P.M.; and although nearly all other trades have fallen through, the chemists have manfully kept their word with remarkable equanimity and good feeling.

Their first meeting having been so successful, the desirability of uniting together in an Association was suggested, and this union has now been effected.

It was thought that a social gathering would be the most appropriate inauguration; and a general response being given, about twenty members of the trade, on Friday, the 25th ult., sat down at the station hotel to a sumptuous dinner provided by Mr. Wells, a respected member of the fraternity, whose efforts to cater for the enjoyment of his friends were of a most successful character.

The usual loyal and local toasts were proposed, and a most cordial feeling prevailed.

Those present unanimously admitted the necessity of union for promoting mutual interests, and for preparing the younger branches, as opportunity presented, by classes or otherwise, to pass the now necessary examinations; and it being understood that an Association with such objects should be formed, the following were elected officers for the ensuing year:—*President*, Mr. Alderman Porrett; *Vice-President*, Mr. Robson; *Secretary and Treasurer*, Mr. Whitfield. It was also understood that arrangements should be made for monthly meeting, out of the season.

THE SHEFFIELD PHARMACEUTICAL AND CHEMICAL ASSOCIATION.

The First General Monthly Meeting was held on Wednesday evening, February 9th; Mr. E. WILSON, the President, in the chair.

A lecture was delivered by W. BAKER, Esq., F.C.S., upon "The Detection of Poisons." He said,—"The detection of poisons is only a branch of analytical chemistry. The substances to be discovered are grouped in a different manner than is usually adopted in ordinary analysis; with a short review of the poisons, and their classification, a method of search is proposed which may be advantageously pursued by the operator.

"Poisons are divided into irritant poisons and neurotic. Amongst the former we have the mineral acids, oxalic acid, alkalies and their salts, phosphorus, arsenic, antimony, mercury, lead, copper, zinc, and other metals, besides vegetable and animal irritants. The neurotic poisons are divided into three classes, according to their physiological action,—narcotic, spinal, and cerebro-spinal. As types of the three, we may take opium, nux vomica, and belladonna.

"In case of matters containing poison being examined, the first thing to be observed is the odour, and then to distil a portion for the volatile poisons. Alcohol may be detected by its well-known physical properties, and by boiling with a little hydrochloric acid and a few drops of potassic bichromate. The solution changes to a green colour from the formation of chromic oxide, and the characteristic smell of aldehyde is perceived. Hydrocyanic acid, if suspected to be present, must be collected in an ice-cold receiver containing a little water. Argentic nitrate produces a white curdy precipitate, insoluble in dilute nitric acid. This test may be made very delicate by inverting over a watch-glass containing the fluid a second one having a single drop of the silver nitrate on the inner surface. A white film will soon form from the vapour of hydrocyanic acid present. Another elegant test is to form sulphocyanide of ammonium by presenting a drop of yellow sulphide of ammonium to the action of the vapour. The reaction of this salt with persalts of iron, producing a crimson red colour, is well known, and is distinguished from the red colour produced by meconic acid and persalts of iron, by its ready removal on the addition of mercuric chloride, which has no action upon the colour of the meconate.

"In a second portion of the liquid or substance to be examined, search may be made for oxalic acid, and the mineral acids and salts.

"Powdered substances may often be readily detected by projecting a portion into a tall vessel filled with water. Any white particles may be picked out and examined for arsenic, lead, etc. Others of red, yellow, or green colour, may be arsenic, copper, antimony, etc.

"A third portion should next be acidified with hydrochloric acid, and one-third of it taken for the detection of the alkaloids. A description of the methods employed was given, and the special tests for strychnia, brucia, morphia, and meconic acid shown. The microscope is invaluable for the certain identification of crystalline precipitates, as shown in Wormley's 'Micro-chemistry of Poisons,' which was highly recommended.

"In the next portion the metallic poisons, arsenic, antimony, and mercury are to be sought. All precipitate in the metallic state from an acidified solution upon immersion of a piece of clean copper foil. The characters of the sublimates from these deposits was described, as well as the method of applying Marsh's test for arsenic. Lead, copper, and zinc are to be detected in the last portion."

The President, Mr. E. WILSON, proposed, and Mr. WARD seconded, "that the best thanks of the meeting be given to Mr. Baker for his able and interesting lecture," which was carried unanimously.

The minutes of the last meeting having been read and confirmed, the SECRETARY read a letter he had received from Professor Attfield, thanking the Association for having elected him one of its Honorary Members.

Mr. COOKING proposed and Mr. WARD seconded, that the letter be entered upon the minutes. Carried.

The nomination and election of members and associates concluded the business of the meeting.

The Second General Monthly Meeting was held in the rooms, March 9th, Mr. WILSON, the President, in the chair.

A lecture upon Disinfectants was delivered by A. H. ALLEN, Esq., F.C.S., and Lecturer at the Sheffield School of Medicine. He said that modern medical science had proved that infectious diseases, such as cholera and typhus fever, owed their origin to the presence of minute germs or organized cells which multiplied with extreme rapidity under favourable conditions. These germs were solid, and probably acted in a similar manner to the yeast plant in presence of sugar or bread. In disinfecting, therefore, we should keep in view the necessity of destroying the deadly germs, besides simply getting rid of a disagreeable smell. There were some substances, such as chloride of lime, which acted chiefly on the smells, and were little better than deodorizers, unless used in large excess; while others, like carbolic acid, were real antiseptics, killing the germs and arresting all putrifaction, but exerting little or no action upon the smells. In choosing a disinfectant, it was necessary to be guided, to a certain extent, by circumstances, but on no account to use two disinfectants together, which will eventually destroy each other's action; such, for instance, as chloride of lime and Macdougall's Disinfecting Powder. Mr. ALLEN concluded by exhibiting some of Dr. Tyndall's beautiful experiments upon the dust of the air, proving the motes, visible in a strong light, to consist of organized matter, capable of removal by filtering the air through cotton wool, or passing it through a red-hot tube.

Mr. DOBB proposed, and Mr. WARD seconded, that a vote of thanks be awarded to Mr. Allen for his lecture, which was unanimously carried.

The minutes of the last meeting were read and confirmed.

Messrs. R. Spear, E. Wiles, and J. E. Dyson were elected Members, and Messrs. Appleton, Atkinson, and Carr, Associates.

The Council had much pleasure in accepting the offer of Mr. Ward, M.P.S., to give a course of twelve lectures to the students of the Association on "Pharmaceutical Chemistry," in the lecture-room of the Society, every Thursday evening at nine o'clock, commencing March 24th. There being no other business, the meeting broke up.

A Special Meeting of the Members and Associates was held, March 17th, for the purpose of considering the proposed legislation as to the regulations to be observed in the keeping and dispensing of poisons, as proposed by the Council of the Pharmaceutical Society. Mr. E. WILSON, the President, took the chair, and there was a good attendance. After eliciting the opinions of all present, and fully discussing the subject (which incidentally brought out the fact, that all were adopting precautionary measures of some kind), the following resolution was unanimously adopted:—

"That this meeting is desirous to express its thanks to the Council of the Pharmaceutical Society, for its valuable suggestions as to the regulations to be observed in the keeping and dispensing of poisons, but feels that, as the heavy responsibilities resting upon members of the trade, tend to make them take the most careful precautionary measures to prevent accident, and as every business is so varied and peculiar in its character and circumstances, each principal ought to remain at liberty to make such arrangements as will best suit his own particular case, and, therefore, any definite legislation on the subject would be unwise, inconvenient, and unnecessary."

The subject of the licence for the sale of patent medicines was then introduced, it being deemed desirable to ascertain the views of the Association on the matter, although the action of the Council in London in reference thereto is, for the present, suspended,—the following resolution was unanimously agreed to:—

"That this meeting is of opinion that it is not desirable to abolish the licence for the sale of patent medicines, but it would not object to a uniform charge of 10*s*. or upwards."

This concluded the business of the meeting.

SUNDERLAND CHEMISTS' ASSOCIATION.

The Monthly Meeting of the above Society was held on Monday, March 8th, in the Athenæum; W. THOMPSON, Esq., President, in the chair.

The lecturer for the evening was Mr. D. B. SHARP, who, addressing himself to the students, pointed out with great minuteness the leading points in the science of materia medica, particularly in reference to the Minor Examination, showing how easily the requisite amount of information could be obtained, with a very little systematic exertion; and illustrating his lecture with samples of genuine and adulterated drugs. After cordial votes of thanks to the lecturer and Chairman, the Annual General Meeting was announced for April 4th.

TAUNTON.

Several meetings of the chemists of Taunton have been held during the last few weeks, which were attended by the whole of the trade.

The chair was occupied by Mr. PRINCE, the Local Secretary of the Pharmaceutical Society.

The provisions of the Pharmacy Act, with the recent regulations, were discussed. Other questions of considerable interest were considered, especially the Benevolent Fund, which was warmly advocated by several members, and the Chairman intimated that he intended shortly to call upon all personally in its behalf.

A Committee was also formed to consider the question of prices, and, after some deliberation, submitted a revised list to the members, which was unanimously approved, and at once adopted. The greatest harmony and good feeling prevailed; and a resolution was passed to the effect, that they should meet every three months for the discussion of matters of mutual interest.

BIRMINGHAM CHEMISTS' ASSISTANTS' ASSOCIATION.

At a General Meeting of the above Association on Tuesday evening, March 22nd last, a present was received from Messrs. Evans, Sons and Co., of Liverpool, of a materia medica cabinet, containing various specimens of a large variety of drugs, suitable for candidates for the Major examination. A cordial vote of thanks was passed to the donors, and the evening was spent in examining the specimens. It was determined to have materia medica papers and classes on alternate meeting nights.

ORIGINAL AND EXTRACTED ARTICLES.

ON SO-CALLED CARBOLATE OF IODINE.

BY WALTER G. SMITH, M.B. DUBL.,
FELLOW AND CENSOR COLL. OF PHYS., ASSIST. PHYS. ADEL. HOSP.

A preparation bearing this title has lately been brought into notice, under the synonym of "Colourless Tincture of Iodine." The chief advantage claimed for it is that it leaves no stain or mark on the linen or skin, while it is left to be inferred that its beneficial effects are similar to, if not identical with, the tinctura iodi of the British Pharmacopœia.

In the 'American Journal of Pharmacy' for 1868 a formula was given for "Colourless Tincture of Iodine," indicating the following proportions:—Compound Tincture of Iodine, ♏ 45; Carbolic Acid, crystallized, fused, ♏ 6; Glycerine, ʒ viij; Water, ℥ v. It was stated that the colour of the iodine gradually disappears, and much more quickly if heated; that the change was due to the carbolic acid, and not to the glycerine; and that the iodine was probably transformed into iodoform. No doubt if iodine, carbolic acid, and glycerine are mixed together, and especially if heat be applied, some of the iodine is decolorized; but this is, in all likelihood, due to a partial conversion of the iodine into hydriodic acid.

It was paradoxical, and indeed beyond belief, that *free* iodine could exist in a *colourless* solution; and as I was aware that such a preparation had been adopted in practice by some medical men, I thought it worth while to test qualitatively the nature of this vaunted new (?) compound. The specimen I examined, derived from a well-known source, had a slightly acid reaction, an unmistakable odour of carbolic acid, and possessed a sweetish taste, followed by a pungent tarry flavour.

When added to starch paste, no blue coloration was developed unless nitric acid were first added, consequently there was no *free* iodine. Heated with slaked lime, ammonia was abundantly evolved. It was now evident how the iodine was rendered colourless through the formation of iodide of ammonium, and indeed I had previously been given to understand that the vendor of this preparation, finding that the iodine solution was not entirely decolorized by the carbolic acid and glycerine, took the liberty of adding some ammonia to complete the process. Treated with tartaric acid and starch, no blue colour was formed, and hence the absence of iodate may be concluded. Some of the original liquid was then evaporated in a platinum capsule. It turned brownish, and, on further heating, gave off a pungent odour, at once recalling that of acroleine. A syrupy sweet liquid remained, which did not reduce nitrate of silver, but, after caustic soda was added and a rather higher heat applied, the liquid reduced nitrate of silver, owing to the formation of formiate of sodium from the decomposition of the glycerine. The composition, then, of this proposed remedy is carbolic acid, glycerine, water, and iodide of ammonium. It will scarcely be contended that the effects of iodine, locally applied, are quite the same as alkaline iodides; if it were so, the sooner tincture of iodine is banished from use the better. But, in any case, the title of this preparation is not borne out by its real composition; and as the majority of medical men are too ready to try any presumed novelty on the dictum of others, without inquiring into the merits of the thing suggested, it is all the more necessary that spurious or deceptive drugs should be exposed as soon as possible.

Not long since, a Mr. F. Stearns, of Detroit, was expelled by a large majority (63 to 22) from the American Pharmaceutical Association for the sale and advertisement of an article which he called "sweet quinine," but which contained *no quinine*, and was therefore a fraudulent imposture. Such a wholesome spirit of self-respect and of proper dignity speaks well for the *status* of medical ethics among our American brethren.

Dublin, March, 1870.

ON ARTIFICIAL FLAKE MANNA.

BY EDWARD HISTED.

After the reading of Mr. Hanbury's "Historical Notes on Manna," at the meeting of the Pharmaceutical Society of November 3rd, 1869, a few remarks were made by some gentlemen present respecting the existence of an artificial manna, said to be a very good imitation of the genuine. Some weeks since I was fortunate enough to become possessed of a specimen of this substance which had been brought from Paris, and was much surprised at the clever manner in which it had been produced, and the great resemblance it bore to what it was intended to imitate.

The consumption of manna in this country being comparatively small, a factitious or adulterated form of the drug would scarcely be accepted by pharmaceutists; this may account for the artificial flake manna in question being so little known in England.

In the first volume of the Pharmaceutical Journal (1842) will be found a description of a spurious sort of manna having a singular resemblance to the genuine, but differing essentially in that it contained no mannite, but was mainly composed of sugar of fecula, or glucose.

The artificial flake manna, which I have made the subject of my experiments, is certainly something better than this; yet, though one may hesitate to stigmatize it as spurious, there can be no question it is intended to deceive, it being, according to the printed circular which is sold with it, manna of inferior quality which has been purified and made to assume the form of the large stalactitic pieces which constitute the most esteemed form of the drug. The printed circular accompanying each parcel, in fact, alleges that it consists entirely of natural manna, and that it is free from sugar, starch, jalap, scammony, or other foreign substance; that it differs only from natural manna in not being contaminated with slight impurities, such as particles of wood, bark, and leaves, which are always found in the latter; and, finally, that it has precisely the same medicinal action as natural flake manna.

A cursory glance at this fictitious flake manna would lead to the conclusion of its being the finest natural flake manna, from which, indeed, the public woul not readily distinguish it, but closer inspection reveals certain obvious difference When broken, no crystals of mannite are to be seen in the interstices; there an absence of the peculiar bitter taste and of the odour characteristic of goo manna; the fictitious manna is cleaner, lighter, more uniform in colour, and more solid, than is usual with natural flake; it dissolves more readily in water, and makes a clearer solution, which, when shaken, does not form a permanent froth. If one part be added to four of rectified spirit of wine, and the mixture be boiled for a few minutes, a residue, resembling clarified honey, will be obtained, whereas natural manna treated in the same way leaves a hard substance in irregular masses.

The fictitious flake manna afforded me about 40 per cent. of mannite; natural manna in fine stalactites, treated in precisely the same method, yielded about 70 per cent.

The crystals obtained by alcohol were identical, whether the artificial or natural drug were employed.

27, *Haymarket.*

CHLORODYNE AND ITS INVESTIGATORS.

BY ANOTHER PROVINCIAL.

In a previous number of the Journal "A Provincial" complains that few chemists have noticed his statements about chlorodyne. This reticence is doubtless to be attributed to the urgent duties of their calling, or it may be to its pressing cares, rather than to want of observation, indifference, or any great sensitiveness as to vested interests. Many, less fortunate, perhaps, than our talented friend, may be absolutely prevented by the "res angustæ domi," from indulging in speculations as to "the composition of chlorodyne."*

Having had frequent opportunities of becoming acquainted with the nature of this compound (using it constantly in dispensing, etc.), I will do my best to supply the deficiency of response complained of, by a few brief remarks on some communications which have appeared on the subject.

1. "Chlorodyne *v.* Liq. Chloroformi Co."—On this paper, inserted in the number for September last, I would observe, that while the facts and conclusions are stated with much adroitness, the former certainly do not bear out the latter. The case cited appears to me wholly insufficient to sustain the inference which "A Provincial" deduces from it, viz. that chlorodyne, both true and factitious, owes its efficacy to "morphia *slightly* modified by chloroform." When a patient has taken chlorodyne for three years and three months, in large and repeated doses, and the more urgent symptoms have been (as in this case) relieved, it is not at all surprising that the simpler sedative *morphia* should suffice to keep up the condition of relief thus attained. But this does not prove that the *first* effects were due to morphia *alone*, and that chlorodyne is, *therefore*, only "morphia in disguise."† If it be desirable to ascertain the composition of chlorodyne, this can only be arrived at, I presume, either by chemical analysis or by observation of its physiological effects, when taken in overdose or tested side by side with morphia, etc., on patients suffering from the same or analogous complaints. Hence the case quoted by "A Provincial" is absolutely worthless as

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* In this paper by "chlorodyne," chlorodyne *ver.* (Dr. J. C. Browne's) is intended.

† The imitative chlorodyne probably contained, if not the same ingredients as the true, types of them; one kind is advertised as containing Indian hemp.

regards the actual composition of this remedy, and the same objection may be made to "A Provincial's" reasoning, which he brings against Dr. Dowse (in regard to belladonna), viz. "We must not draw too large inferences from a solitary case."[*] His suggestion, however, that chlorodyne contains two ingredients which tend respectively to contract and expand the pupil, and so "balance and neutralize each other," is, no doubt, as Dr. Dowse remarks, a rational conjecture; but this, instead of following from and supporting his reasoning, appears to be in direct contradiction to it.

2. "Chlorodyne judged Physiologically."—In this valuable communication to the Journal for November last, Dr. Dowse objects to the statement of "A Provincial," "that the efficacy of chlorodyne is due to morphia modified by chloroform."—"On the contrary," he says; "I am quite certain this is not the case." He attributes its efficacy to opium, or rather morphia, modified by belladonna. (Perhaps we should rather say to *belladonna* modified by *morphia*.) On reading his paper I was struck with the coincidence between his remarks and the opinion I have long entertained as to the composition of this remedy. The case he brings forward seems to bear out pretty conclusively his account of the active ingredients contained in chlorodyne, which, with one or two slight modifications given below, I have good reason for believing to be correct.[†]

It is, moreover, highly probable that the theory Dr. Dowse suggests as to the action of this medicine is the right one. Its normal effects are, no doubt, produced by a *balance* between substances that, when separately administered, give rise to opposite results. Such a *balance* appears to exist in the case of opium and belladonna, which, as Dr. Dowse shows, are entirely opposed in their action on the system. It might be expected, therefore, that when combined, they should be mutually counter-active and antipathic. Not that they neutralize each other, but produce a *mean* effect; in some respects *increasing* each other's action, in others *lessening* it. It is, I believe, generally admitted that this is the case, and that the action of belladonna is masked, as to its injurious or dangerous features, by the administration of opium. On this point I may refer to a course of three lectures, delivered at the Royal College of Physicians, in the spring of 1868, by Dr. John Harley, which have been brought under my notice by a medical friend. In these lectures it is maintained that opium and belladonna (taken in combination) do not *antagonize* each other's action, but, on the contrary, produce heightened effects, both stimulant and narcotic. At the same time, belladonna counteracts the *nauseant* effect so frequently produced by opium given internally, or occasionally even by morphia injected subcutaneously.[‡] It is in this way probably that the efficacy of chlorodyne, in ordinary

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[*] Had the morphia solution been substituted for chlorodyne after a few *weeks'* trial, the result would probably have been different; at any rate the inference drawn from it would have had more weight.

[†] My observation would lead me to modify the list of ingredients given by Dr. Dowse, as follows, substituting (as he suggests) tobacco for Indian hemp, and adding sulphuric ether:—

Chloroform.
Hydrochlorate of Morphia.
Extract of Belladonna.
Hydrocyanic Acid.
Tobacco.
Capsicine.
Sulphuric Ether.
Ess. of Peppermint.
Water (or Spirit and Water) and Treacle.

[‡] To support the statement that the action of belladonna with opium is not antagonistic, one experiment (out of many) was as follows:—

(1.) One-twelfth grain of sulphate of atropia, given alone, produced in one hour (besides other results) acceleration of the pulse by twenty-eight beats, and full dilatation of the pupils.

(2.) Four grains of morphia, given alone, caused, in one hour (besides other effects), acceleration of the pulse by twenty and twenty-eight beats, and contraction of the pupils.

(3.) Four grains of morphia given with one-twelfth grain of sulphate of atropia, produced doses, is to be explained; the joint action of morphia and belladonna being further modified by tobacco, chloroform, and hydrocyanic acid. Hence it is only in poisonous doses, such as that which Dr. Dowse records, that the action of the various ingredients becomes *individually* apparent.*

3. "The Composition of Chlorodyne."—In this paper, which appeared in the February number of the Journal, "A Provincial" states, somewhat prematurely, I think, that chlorodyne is "now *proved* to be substantially only a disguised solution of morphia." The *proof*, however, appears to rest entirely on the case related by himself in the last September number (to which I have already referred), and on the analysis by Mr. E. Smith, published in the number for January. Dr. Dowse's communication is entirely opposed to this view. To the Doctor's suggestion that "chlorodyne owes part of its efficacy to belladonna," "A Provincial" replies that he has "never known it, even in full doses, produce any results at all similar to the well-known effects of belladonna." If what I have stated above be correct, I think the reason of this is evident, viz. that in medicinal doses, the *balance* of forces (of the various ingredients) maintained results in a *unity of effect*, so that chlorodyne may act to a certain extent, as if it *were* simply *morphia*, although *it is not*. To the question whether morphia and hydrocyanic acid *alone* could produce the symptoms described by Dr. Dowse, it is not easy to reply off-hand, but I should consider it highly improbable. The symptoms he mentions as among the most noticeable features of the action of belladonna, were well-marked in the case cited, and, had morphia and hydrocyanic acid *only* been present in chlorodyne, it is possible, if not probable, that the result would have been more rapidly fatal; the latter killing, as a "A Provincial" suggests, with its "lightning-stroke." The only real—I was going to say *positive*—proof, therefore, that chlorodyne does not owe any of its efficacy to belladonna, is the "*negative* evidence" of Mr. E. Smith's analysis, which "A Provincial" himself admits "may not be absolutely conclusive." After this admission, it is surprising to read a few lines further on, "This was the one and the obvious thing wanting to settle the controversy." How so, if it is not "conclusive"? I can quite believe Mr. Smith's analysis was "painstaking"† in the highest degree, but, in opposition to "A Provincial," I think it highly probable that the most careful analyst *might* fail to find atropine in such a complex mixture as chlorodyne, even though it were present.‡

(besides other results) just about the same acceleration of pulse in *half an hour* (twenty and twenty-eight beats) which the atropia and morphia had produced, when separately administered, in *one hour;* but the combination did not affect the pupils till *four and a half hours* afterwards, and then produced *dilatation*, while the same substances given alone had caused respectively dilatation and contraction in *one hour*. The combination prolonged for four hours the effect of the atropine.

To support the statement that belladonna counteracts the *nauseant* effect of opium:—One-eighth grain of acetate of morphia injected subcutaneously produced vomiting, but this was entirely removed by injecting one-ninety-sixth grain of sulphate of atropia.

From these results it is concluded that atropia and morphia combined, greatly increased their mutual effects, and it would appear also modify in an important manner each other's action.

* I have known it, however, *occasionally* produce vomiting in ordinary doses, probably from the immediate effect of the chloroform; the stomach being unaccustomed to medicines of this class.

† It was more, it was *conscientious*, evidently a *real* analysis. I observe acid perchlor. appears *only* in Dr. Ogden's formula. Could this have been suggested by the fact that in one of his earlier prospectuses, Dr. Browne mentions this acid in conjunction with a certain alkaloid? This certainly looks more like *synthesis* than *analysis*, but on rather an insecure foundation, I fear.

‡ *Would* the atropine be dissolved out by digesting chlorodyne with *alcohol*, if *extract* of belladonna had been used? Since writing the above, I find that "Pharmacist" had suggested (Pharm. Journ. September, 1869, p. 167) the addition of extract of belladonna to Mr. Squire's formula to make it "more like the secret remedy," before Dr. Dowse's paper appeared.

It is clearly apparent, I think, that "A Provincial" having framed a theory as to the composition of this medicine, is anxious to make everything square to it. To what else can we attribute his remark that the prussic acid is "at least indifferent, even if it be not positively an impertinent intrusion," etc. etc.? What evidence does it bring to show that its effects *in chlorodyne* are "transient," and if they *are*, how does this prove that it is "quite superfluous," etc.? Is not this a mere assumption to support a preconceived theory? There is, indeed, no question (so far as I am concerned) that this compound *contains* morphia, but it is by no means yet proved, I think, that "the effects produced by normal doses of chlorodyne are due exclusively to it." Nor is it likely that, if this were so, practitioners would long have been deceived by "a happily chosen name," or a "disguised solution" of an old remedy. Morphia *in chlorodyne* would have produced no other or better effects than morphia "unadorned;" it is because there is something in this preparation *besides* morphia, that it has been given in "thousands of cases with the happiest results." The makers and takers, as well as the sellers of chlorodyne, are no doubt greatly indebted to "A Provincial" for *aiming* to put chlorodyne "on its right footing and in its right place," and "by laying bare the truth to dissipate delusions," etc. But I cannot say I think he has succeeded. Is he quite sure of his own *footing* in this matter? Anyhow this is rather "tall" writing, as the Americans phrase it, and though I do not defend Dr. Browne's grammar or his "warnings," yet if, as "A Provincial" says, "the learned Doctor doth protest too much," surely his critic boasts too loudly and too soon.

In the above remarks I have regarded chlorodyne entirely from a scientific and medical point of view. There is, however, another aspect in which it may be looked at, suggested by "A Provincial" and other correspondents, of considerable importance to the medical profession, the trade, and the public, viz. the commercial and pharmacological, which I must reserve for future consideration.

COD-LIVER CREAM.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—The following is worthy of mention in your 'Journal,' as an admirable recipe for a preparation that is somewhat extensively vended in several parts of the country under the alluring title of "Cod-liver Cream."

A quarter of an ounce of elect gum tragacanth, steeped in sixteen ounces of cold water for twenty-four hours—during which time it should be stirred occasionally—yields a fine, gelatinous mucilage, which, when mixed in any proportion with Cod-liver Oil and simply shaken with it, permanently diffuses the oil into particles, which in vain struggle for reunion.

It is usual to mix the mucilage and oil in equal parts, and it is further only required to sweeten, and add, as a preservative and savourer, to each ounce of the mixture one drachm of spirit of wine, to which has been added a drop of essence of lemon, the same quantity of essence of almonds, and a trifle of oil of cassia.

Thus is the *mélange* completed, and of so agreeable a flavour is the result, that to most palates it would be found to acquit itself creditably in comparison with an average custard.

EMULSIO.

THE BREEDING OF LEECHES.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—Dr. Thomson, in the 'London Dispensatory' of 1818, says that leeches are oviparous, and all the ova are discharged in one involucre, near the surface and the margin of pools, and are *hatched by the heat of the sun.*

The sellers of leech aquaria say, that if shingle and aquatic plants, water and leeches are placed in them, they will breed there. I have endeavoured several times to get the valisneria to grow, but have never succeeded, as I have not had earth with it; the anacharis grows luxuriantly, but discolours the water.

On the 18th of August, 1869, I placed fifty leeches, which were just received from Fitch and Nottingham, in an aquarium, with about three inches of shingle and shells at the bottom of it, but no plant, and in about a month afterwards, I had all taken out and well washed under a water-tap; as the leeches were very healthy, it was let alone for about two months, when the water was gently poured off, and refilled with water from an artesian well. To economize counter room, my aquarium is placed upon a case, and six inches from a gaslight; over it is suspended a gaslight, which throws a good deal of heat downwards upon the side of the aquarium. About ten days ago, when I was passing the end of the counter, and the light shining through the water, I observed some thread-like living objects, about half an inch long, just opposite the gaslight, where the aquarium was warm, but soon after the light was extinguished they disappeared; two evenings afterwards they came to the same place, and had now the habits of the leech, by adhering to the glass with the anal extremity, and moving about continually, until they adhered to it by the mouth. I next saw others of apparently another hatching, as they were only about three-eighths of an inch long. Two nights ago my assistant called my attention to something under a pebble, which seemed to move; and last night, when he showed me a similar appearance under a stone, I took the stone out to see whether the substance adhered to it, but found it loose, and it followed the movement of the water, and was of a light filmy appearance, struggling with life, which separated into two parts, several leeches becoming disentangled, floated away, when the two parts went to the bottom, numbering apparently about thirty.

From what I have noticed, the leeches have deposited their ova under the pebbles, and had *been hatched by the heat of the gas.*

I shall be glad if any of your readers can inform me how and where I could get a valisneria plant, with earth to its roots, as it does not easily take root after being taken out of the earth.

I remain yours respectfully,

T. Colton.

Selby, February 18, 1870.

AN APOLOGUE OF CORPOREAL AND COSMICAL INFINITY.

BY FRA OLLÆ.—PART I. AB OVO.

"Sermons in Stones."

Some disquisitions on the constitution of matter, that have recently appeared in the 'Pharmaceutical Journal,' have reminded me of a conversation (of which I have fortunately preserved the notes) upon a kindred subject; a conversation which interested me much at the time, and which may possibly prove interesting to some of its readers. I do not, of course, pretend to have preserved everywhere the precise language that was used; but substantially, and in all essential particulars, the following paper is a faithful record and transcript of what passed.

Some years ago it happened that, one bright spring morning, I took a long walk with a geologically-minded friend, whom his acquaintances, not altogether without reason, charged with a tendency to over-refinement in speculation. The air was lucid and balmy, the fresh foliage of the young year glistened and shimmered in the light breeze, and, as his spirits rose beneath the exhilarating influences of the day, my monologistic companion waxed more and more earnest and eloquent. Time sped quickly, and a third part of our journey had been pleasantly accomplished, when we entered upon the chequered shade of a long reach of road, lined on either side with tall trees, its grassy margin studded at intervals with heaps of stone, intended for road metal. As these heaps proved to be highly fossiliferous, I did not wonder that my companion made frequent pauses, and much use of his hammer. But I did wonder when, after having spoken to him several times and received no answer, I looked to see how he was engaged, and found him earnestly contemplating a fragment about the size of an egg, which he held in his hand. Upon getting no reply to my fourth question, I ventured to touch him on the shoulder; whereon he started, drew a deep breath, as of relief, and came out of his reverie.

"What have you there that is so interesting?" said I; "for, to me, it appears nothing but an ordinary stone."

"That is because you behold it only with the eyes of the flesh," he replied. "If you could put off your fleshly robes, and regard it with the far-reaching insight of the intellectual vision, in this simple stone you would see a perfect microcosm, an apt epitome of the macrocosm of which you and I have the privilege to be two units."

"But since, unfortunately, I am only of the earth, earthy," I answered, "it is impossible for me to adopt your exalted suggestion, and I must remain contented to see in a stone only a stone."

"Not so," he rejoined. "Only place yourself under my guidance for half an hour, and, with your own help, I think I shall be able to show you what I myself have been seeing during the past minutes."

I perceived now that I was fairly committed to one of my friend's speculative lectures; and, in order to fulfil comfortably one of the most graceful offices of friendship, viz. that of an attentive and appreciative listener, I at once proceeded to light a cigar, and, under its soothing influence, composed myself to listen; which I did the less unwillingly, as we now had before us the tamest and least interesting portion of our journey.

"You observe," he commenced, "that this fragment of stone consists of numerous granules, of various irregular sizes and shapes, casually thrown together, and adhering with moderate tenacity."

I agreed that it was so.

"Now let us suppose," he continued, "that our visual powers become, momently, more and more acute, and are steadily and continuously enlarging in compass, so that that, which just now was merely a small stone, swells and dilates before us till it is magnified into the proportions of an enormous mass, which fills the entire field of our enlarged vision."

"I see nothing but this enormous body shutting out the entire firmament," I assented.

"And do you not perceive," he went on, "that what before appeared to us as a solid substance, has now become a honeycombed mass, full of interstices; that each granule has swelled into a distinct body, every one of these bodies again being composed of innumerable sub-granules?"

I admitted that he pictured it exactly.

"We will next suppose," he proceeded,—"and this is the second scene of the diorama which I have undertaken to unroll before you,—that we become endowed with yet another increase in our visual powers, and that as these go on enlarging, our object, at first a small stone, now a huge globe, continues to swell and expand, till from the proportions of a mountain, it dilates into the presentment of an entire world. But while it is thus enlarging itself, and before too much of it has passed away from before our immediate view into the far distance, choose you, for special observation, some one of those separate granular bodies of which it is composed, and mark the changes that take place in it, as it gradually distends itself, and, in doing so, reveals to us secrets hidden hitherto from human gaze."

"I have chosen," said I, "the one just fronting us, shaped something like a lentil, and will watch it narrowly, as you desire me."

"Observe then," he continued, "as our granule dilates, and comes to occupy by itself the whole field of vision, which before contained the entire mass, how it gradually parts with its apparent solidity and opacity, and becomes, as it opens out, first like a dense cloud, next nebulous, then translucent, till, upon looking intently, it resolves itself into a huge space, eddying about in which are innumerable small specks, of various sizes, and at considerable distances apart, all of which appear to be in a state of regulated movement, floating, like motes in a sunbeam, softly and silently, about and around, above and below, some slowly, some more rapidly, but none conflicting with, none jostling any other. Observing still more closely, note how, as the sight becomes accustomed to the view, this maze of corpuscles resolves itself into countless groups, the members of each group revolving variously about a common centre, or about each other. The clusters of groups appear also, by parts, to be symmetrically arranged,—here after one pattern, there after another,—in some places, thick as the stars in Orion; in other places, less than the number of the Pleiades; everywhere, variety, but everywhere, also, order, harmony, and symmetry."

"Everything corresponds with your description," I observed.

When I had been for some time engaged in the contemplation of this varied scene, or, to speak more correctly, in listening to my speculative friend's minute description of it, he resumed in this wise.

"That which, through an idealized vision, has now been revealed to you, is the intimate, internal structure of body. The groups which you see, and which exhibit some miniature semblance of our cosmic systems, are the so-styled molecules of the body; and the moving points, which may be compared to the globes of those systems, are the atoms of which those molecules are severally composed. For, you must understand, that though the body, as a whole, is relatively at rest, the intimate parts of which it is composed are in a state of eternal movement. Contrary also, I dare say, to your preconceptions, body, so far from being the dense solid thing that is superficially taken for granted, is composed, for the greater part, of interspaces between its atoms, these atoms themselves occupying but a very small proportion of the entire bulk; though their influence, like that of gravitation, extends throughout the whole of the interspaces, and reciprocally regulates and determines their own respective distances and movements. In truth, though I wish to avoid any appearance of paradox, yet, rather than suppose body to be made up of dense cohering particles, such as, to our fleshly organs, this stone seems to be, I would prefer to hold that the proportion of its atoms to its interspaces is as the joint cubical contents of the sun and all the planets, comets, etc., to the cubical contents of a sphere, whose radius measures the distance from the sun to the remotest yet undiscovered planet."

"But this," I remonstrated, "is worse than Falstaff's ha'p'orth of bread to unlimited sack; it would be the proportion of one to millions."

"Very true," he agreed; "but I am far from laying down any such disproportions. I only say that I should prefer this theory to that of perfect solidity. For, upon the supposition that atoms are cemented together, like flints in a wall, how could motion among them be conceived, or change of any kind?"

"So long as you do not require me to entertain such vast disproportions," I responded, "I am quite willing to accept your presentation of the subject as among the things that may be possible. But what have you to say respecting these great interspaces? What do they contain? Or do they contain anything?"

"They do not contain anything," he replied; "neither do they contain nothing; yet, nevertheless, they contain something."

"Now you are more enigmatical than the sphinx," I demurred.

"Listen!" he explained, "and I will endeavour to make my meaning clear to you. To say that this space contains *nothing* would be to say that it contains matter. But as matter is not self-subsistent, this is simply impossible. To say that it contains *anything* would be to say that it contains body. But this is contrary to our hypothesis, according to which this space separates bodies, and is by nature opposed to, and different from, them. But when I say that it contains *something*, I virtually affirm that it is filled by a substance, and that this substance separates bodies—maxima and minima—not only as a dead matter of fact, but, that it moreover actively and potentially separates them, and maintains them separate; insomuch that, if we could imagine it annihilated, they would run together and fall into chaos."

"Am I to understand," I here interposed, "that you parallel the words nothing, something, and anything, with the terms matter, substance, and body, as meaning that the former are correct logical designations of the latter?"

"Undoubtedly," he replied. "For matter, as you are well aware, is nought, *no* thing. Substance, however, actually subsists, and is *some* thing, the something out of which all things are made that are made. But body is *any*, and therefore every, thing that does exist, did exist, or ever will exist."

"I dare say you are right," I hesitated; "and when I have had time to think over and digest what you have been saying, I may be able to see it as clearly as you appear to do; but, at present, these logical quiddities are rather confusing."

"The more you think over it, the clearer it will become to you," said he. "But as the subject is now pretty nearly exhausted, let the charm be dissolved, and our preternatural vision contract to its ordinary focus. While this is taking place, note, as the atoms and molecules gradually draw together and fade from separate view, how our body begins again to take consistence, passing from the appearance of a filmy vapour to that of a mist, of a cloud, of a still denser cloud, till, as it approaches its original size, it recovers its pristine opacity and solidity, and remains at last a mere stone in my hand. *Sic transit.*"

Saying which, he jerked the stone away, and for some time maintained a contemplative silence; while I occupied myself in reviewing and pondering over the strange views he had so unexpectedly placed before me. We were both of us soon aroused, however, when, upon turning a bend of the road, we came in sight of a picturesque old-fashioned inn, renowned as well for its excellent ale, as for the quaint shrewdness of the host; and here we determined, *nem. con.*, to take half an hour's ease, and refresh ourselves for the continuance of our journey, now about two-thirds finished. After some smart passages of arms between my companion and our host, in which I must confess that the latter had the advantage, we paid our reckoning, and resumed our walk; and, what with the rest, the mug of old ale, the continued brilliance of the day, and, as possibly my excellent friend flattered himself, the brilliance of his own conversation, we resumed it with spirits higher even than when we started in the earlier morning.

"This day deserves to be marked with a white stone," I began.

But what my companion replied, and in what loftier, or, at least, in what wilder, flights of imagination he indulged during the remainder of our walk,—this must be postponed to a future opportunity.

THE CONSTITUTION OF MATTER.

A "Provincial Atom" has taken exception to certain expressions made use of in a paper of mine, which has recently appeared in this Journal. Since his objections compel me to appear once more in print upon the same question, I must in the first place express the obligation I am under to him for the clever epitome of that paper he has been at the pains to elaborate, and for the additional interest communicated to the dissertation which standing alone it would scarcely have presented.

My design was not so presumptuous as the serious enunciation of a new theory would amount to, but in the first place, and chiefly, to offer to the readers of the 'Pharmaceutical Journal' a connected view of the whole facts of the case; and secondly, to indicate my dissent from the views recently expounded by the President of the Chemical Society, in a lecture which has since been published.

I desire to be as brief as possible, and therefore proceed to enumerate those points upon which I must confess my opinion unaffected by the arguments of my critic.

I must first observe that Provincial Atom seems much concerned for the fate of chemistry, which he seems to think hangs on that of the so-called atomic theory. But let me assure him that when it comes to be offered seriously as a probable representation of the real constitution of the material universe, chemists will have nothing to say to it, and, except perhaps the few who are inclined to be bigoted, will and do prefer to accept it, solely in the character of a figure symbolizing something intelligible only by means of some such theory. The hypothesis of physical atoms gives us assistance in the explanation and grouping of certain facts, and puts them in a form easily adapted to mental manipulation, but if you ask me if I believe in the existence of atoms as usually described, I must reply, that as a chemist, I cannot acknowledge that I do, inasmuch as chemistry alone throws no light upon the subject.

Provincial Atom views the questions now under discussion more particularly in their metaphysical aspect than I have ventured to do; but I would ask him also to study the aspect which is chiefly offered to the contemplation of chemists. I am sure he cannot have done so, or he would never have pronounced so decidedly that "chemistry is a science of precision, of a precision cognate, if not equal, to the precision of mathematics." The contrary is just the case, as things at present stand. That precision is capable of being introduced into chemistry I do not doubt, but the day when that precision is to be attained is yet far distant; at any rate, when it may be said of the science as a whole, that it is in any way to be compared with mathematics. But Provincial Atom admits this; for he says in his second communication, "it is evident that chemistry is still in its childhood, and that as yet, we have struggled but a very short distance beyond the threshold of the science."

I would humbly submit that I employ the term 'matter' in the sense in which it is employed generally by physicists.* The distinction between matter and body is a purely metaphysical distinction. In chemistry the ideas cannot be separated; for chemistry has to do solely with body, and in treating of body we include matter.

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* The following is a quotation from one of the educational works of a well-known mathematician, Mr. Todhunter:—"*Body* or *Matter* is anything extended and possessing the power of resisting the action of force." I merely wish to show that I am not singular in using the terms almost as synonyms."

But I freely congratulate Provincial Atom upon his very successful exposition of the applications to which the use of the terms *matter, substance, body*, ought to be restricted. I only fear difficulties in the setting up of these boundaries upon the territory of physical inquiry. ✓

Following the sections of his second paper, I have but a few remarks to offer.

§ 1. The definition of *cause* which I had in my mind was one which I became acquainted with as a student, and which will be found in several works on logic. The cause of any given effect is usually taken to be that circumstance which forms the crowning point of the assemblage of conditions essential to the production of that effect. It is the last hair which turns the scale.

In the production of a chemical reaction, *e. g.* the formation of a precipitate, there must be a certain material to operate upon, which must be under certain conditions of solution, temperature, and the like, before the addition of the reagent will bring about the desired object. And I merely intended to allude to the obvious circumstance that if we can imagine the reversal of any one natural law,* the whole order of the universe would be changed.

§ 2. Provincial Atom appears to have misunderstood not only my statements with regard to the composition of graphitic acid, but also one of the most obvious requirements of the atomic theory in its chemical aspect. A really valid objection to any allusion to that substance would have been this: that our knowledge of it is at present so incomplete, that without further investigation, no conclusive argument can be based upon it. Carbon, in its ordinary combinations, exhibits a combining weight 12 times that of hydrogen; in the peculiar condition in which it gives rise to graphitic acid, it combines in a proportion which is 33 times that of hydrogen. If this latter number had been 24 or 36, it would have been easy to understand how two "atoms" of the ordinary kind in the one case, or three in the other, could coalesce to form a new unit of combination; but no relation of this kind exists between such numbers as 12 and 33. Now the atoms thrust upon us by the atomic theory are, by the hypothesis, indivisible. If divisible, the whole theory collapses; if indivisible, fractional parts of them cannot be admitted into our formulæ and reasonings. The manifest inconvenience of frequently employing such formulæ, even to express proportions, would alone decide against them.

§ 3. It would occupy too much space to discuss fully Faraday's arguments. I can therefore only observe that I derive no assistance in endeavouring to imagine the rationale of electrical conduction and insulation from the suggestion of Provincial Atom, as to the possibility of an atmosphere investing each atom in a body. For it immediately occurs to one to inquire what is the atmosphere so assumed? Either it is of a material nature or not: if not, if it is really empty space, then Faraday's argument has only one alternative, viz. that which we call electrical conduction must be an effect springing from some hidden cause, and related to it somewhat in the way that weight is to gravitation. The influence then which gives rise to electrical conduction must be capable of operating through perfectly vacuous space, just as we believe gravitation is capable of acting; if, on the contrary, the assumed atmosphere is any way analogous in constitution to the central atoms themselves, the same difficulties have to be got over which are encountered in treating of the constitution of body.

Provincial Atom inquires what becomes of the nine volumes when ten volumes of air are condensed into one; does he purposely overlook the fact that at any rate some portion of the x is represented by no other than the *heat* which is given out during the experiment?

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[*] As, for instance, the contraction instead of expansion of bodies by increasing their temperature.

§ 6. Provincial Atom is a little unfair in his mode of dealing with my concluding paragraphs. Had I anticipated so serious a criticism, I might perhaps have been more cautious in my forms of expression. But I see no reason to withdraw my statement that heat, light, etc., are motion.

Some of these misunderstandings arise from the unfortunate use of the same word to signify both cause and effect.

When I say that heat *is* motion, I intend, of course, to imply that the phenomena which we attribute to a something we usually call heat, are the effects of a particular kind of molecular movement; that is to say, we apply the term heat to this movement; it is only another name for it. I see no more impropriety in this, than in the commonly received opinion that compound bodies contain and are built up of simpler bodies which we call elements; and yet we have no more evidence of this than that by associating the elements together under suitable conditions, we get compounds, and by suitably treating these compounds, we again get elements. I should, perhaps, have been plainer, had I said, heat is one kind of molecular motion, light another, electricity a third kind, and so on.

But the reasoning Provincial Atom imputes to me can only be paralleled by such as the following:—

Red, yellow, and blue are colours. Then, since things which are equal to the same thing are equal to each other, red, yellow, and blue are the same.

WILLIAM A. TILDEN.

NOTES AND ABSTRACTS IN CHEMISTRY AND PHARMACY.

The Employment of Bisulphide of Carbon in Pharmacy.

M. Lefort has been making experiments upon the employment of bisulphide of carbon in the preparation of what he calls "sulpho-carbonic extracts" of medicinal plants. Since moisture opposes a certain obstacle to the solvent action of the sulphide of carbon, he first dries the powdered vegetables at a temperature of about 50° to 60° C. He then exhausts the dry powder by maceration with several quantities of the sulphide successively applied, decanting and filtering the solution obtained. The exhausted vegetable powder retains about half its volume of the liquid, which can be recovered by distillation. The tincture obtained is distilled by means of a water-bath, the residue being freed from the last traces of sulphide of carbon by heating gently in the open air. When this has been entirely expelled, the odour peculiar to the plant is distinctly apparent. 100 grams of dry powdered leaves of digitalis, belladonna, henbane, stramonium, aconite, and conium have given quantities very nearly approaching to 3 grams in each case; but, if we consider that the plants lose during desiccation three-fourths of their weight, we may conclude that the fresh leaves contain no more than ·75 per cent. of principles soluble in bisulphide of carbon.

In all these extracts four chief constituents have been found:—1. A fatty matter, apparently identical in the several cases. 2. Chlorophylle. 3. An odorous principle differing with each vegetable. 4. One or more organic bases in the condition of the salts contained naturally in the plants. The presence of the alkaloids can be rendered evident by their action upon animals and by various reagents, such as iodhydrargyrate of potash or tannin. The purpose for which the author designs these extracts is the manufacture of medicated oils, a class of preparations scarcely ever used in this country; but his memoir is interesting, as illustrating the applications to which this most valuable solvent, bisulphide of carbon, is capable of being adapted. These "sulpho-carbonic extracts" would be worth trying in the preparation, for instance, of certain of the plasters, since they are all easily miscible with fatty matters. Bisulphide of carbon might be employed with advantage to replace ether in certain cases, as well as in such an instance as the following, given by M. Lefort:—Camomile flowers contain two odorous principles, the one volatile, the other fixed, but which are both very soluble in bisulphide of carbon. An extract of the flowers can easily be made by first bruising them in a mortar, without drying, and then exhausting as in the other cases. 5 per cent. of semisolid extract is obtained, which unites all the properties of the camomiles.

M. Lefort employs maceration; probably in many cases percolation would be found to answer better.

Purification of Bisulphide of Carbon.

The bisulphide of carbon of commerce would require to be purified to render it fit for such purposes as those detailed above. The process given by M. Cloëz would probably be one of the best. The crude bisulphide is shaken up with one two-hundredth of its weight of perchloride of mercury, and allowed to stand. A precipitate is formed, which carries down the substance which gives to the ordinary article its fetid odour. After twenty-four hours' standing, the supernatant liquid is poured off from the deposit, and distilled by the heat of a water-bath from a flask, into which has been first introduced a small quantity of an inodorous neutral fat. The object of this is not stated, but it probably removes the last traces of the odorous compound. The bisulphide of carbon thus treated is a very volatile, limpid, colourless liquid, with an odour not distantly resembling that of chloroform.

Strychnine an Antidote to Chloral.

Dr. Liebreich, the discoverer of the therapeutic action of chloral, has been seeking, and announces that he has found the antidote to this powerful agent.

He first of all established the fact that chloral diminishes the effects of strychnine, provided it is given very promptly after the exhibition of the poisonous alkaloid.

A much more important result has been obtained in another series of experiments which Dr. Liebreich made subsequently to this, and which had for its object to demonstrate the effect of strychnine upon animals poisoned by fatal doses of chloral. The following is an apparently conclusive experiment:—

Two rabbits received each 2 grams (about 30 grains) of chloral. After half an hour both were in a condition of profound narcotic sleep; the muscular relaxation was such that they appeared as if dead, the respiration being feeble and slow. A milligram and a half (less than one-fortieth of a grain) of nitrate of strychnia was injected into one of them. In ten minutes after this operation the respiration began to resume its activity, the animal moved when irritated, but there were no convulsions; the muscles recovered their tonicity; when the feet of the animal were drawn out he drew them in again. Two hours afterwards the rabbit was sitting up, and four hours after the injection he was completely restored to his usual condition. The other rabbit, on the contrary, which had not received any strychnine, was dead two hours and a half after the administration of the chloral.

A third rabbit, to which no chloral had been given, but only 1½ milligram of nitrate of strychnine, died ten minutes after in violent tetanic convulsions. Nothing similar was manifested after the injection of the strychnine into the rabbit which had previously received some chloral.

It results from these experiments that strychnine, administered after an excessive dose of chloral, cuts short and destroys the effect of the latter, and that without producing its own characteristic action. Dr. Liebreich proposes to make use of injections of nitrate of strychnine in accidents produced by an overdose of chloral or chloroform.—*Comptes Rendus*, 21*st February*.

The Artificial Production of Alizarine.

Much attention from the commercial no less than from the scientific portion of the community is just now attracted by this remarkable discovery, the subject of no less than three patents. At the last meeting of the Chemical Society, Mr. W. H. Perkin, one of the patentees, and so well known from his connection with aniline dyes, gave an account of the processes he adopts, and the products he obtains, in the manufacture of alizarine, several tons of which have already been artificially produced.

The starting-point is *anthracene*, a hydrocarbon extracted from coal-tar, but which has hitherto presented little interest.

Its formula is $C_{14}H_{10}$; by the action of agents of oxidation, such as mercurous nitrate or peroxide of manganese, it is converted into oxanthracene or anthraquinone, $C_{14}H_8O_2$. The next part of the process consists in heating the oxanthracene, with concentrated or fuming sulphuric acid, until a portion of the mixture, when added to water, perfectly dissolves; the resulting product is then diluted with water, and, having been freed from excess of acid by addition of carbonate of lime or baryta, and the precipitated sulphate filtered off, caustic soda or other alkali is added to it in considerable excess, and until the liquid is very strongly alkaline; the solution is then concentrated, and heated up to a temperature of about 200° or 240° C. The product then changes to a blue or bluish-violet colour. The temperature is maintained until the colour of the product ceases to become more intense. The coloured mass is then dissolved in water, and acidulated with hydrochloric or other acid, which causes the solution to become yellow, and a yellowish precipitate to form. This precipitate is collected upon a filter washed with water, and is then in a suitable condition for use in dyeing and printing in the same manner as preparations of madder. It is, in fact, alizarine, $C_{14}H_8O_4$.

Mr. Perkin showed abundantly that the substance thus obtained is really alizarine, and identical in properties with the natural principle procured from madder. Comparisons of its reactions under the influence of chemical agents, of the solutions it gives with alkalies, and of the absorption bands introduced into the spectrum by these solutions, with the appearances of the natural alizarine under similar circumstances, prove this identity.

One great difficulty yet to be overcome before the artificial alizarine can become a commercial article is the difficulty of obtaining anthracene in large quantities; and this question is of some importance to us, England being the great tar-producing country. Anthracene does not appear to exist in greater proportion than one part in a thousand of tar, and is only liberated or produced during the latter part of the distillation of the tar.

Even when the heavy coal oils are obtained the separation of the small quantity of anthracene they contain, and its purification for use, according to the patents, will yet require much time and research. Dr. Crace Calvert, speaking on the subject at Manchester, stated that the purest product he had been able to obtain on a moderate commercial scale contained when cold-pressed about 40 per cent., and when hot-pressed about 70 per cent. of anthracene.

One of the chief difficulties in its preparation is the fact of its great solubility in its liquid homologues at a moderate temperature. Thus, an oil at 40° or 45° F. will yield a comparatively large quantity of anthracene by filtration; but if its temperature be raised to 70° or 80° F. the anthracene will be completely dissolved.

Should the process be commercially successful, it is likely to influence the madder trade very considerably.

ON THE TESTING OF PETROLEUM SPIRIT.

BY F. C. CALVERT, F.R.S., F.C.S., ETC.

Having read with much interest of late several papers on the Petroleum Act of 1868, on the uncertainty of getting good results when testing the "flashing-point" of petroleum spirit (especially the papers published by Dr. Paul in the 'Chemical News,' and a pamphlet by Mr. Norman Tate, Liverpool), I deemed it my duty to make a series of experiments, with the hope of throwing some light on the subject; the more so, that the defect of the Act of 1868 is, that no length of time is specified for raising the petroleum spirit from natural temperatures to its flashing-point. Thus the Act states:—"The outer vessel shall be filled with cold or nearly cold water. A small flame shall be applied at the bottom of the outer vessel, and the thermometer shall be inserted into the oil, so that the bulb shall be immersed about one and a half inches beneath the surface." What is understood by a "small flame," appears to me a difficult question. Whether it shall be such as to require fifteen, twenty, or thirty minutes, to raise the petroleum spirit from natural temperatures to its flashing-point,—say 98° F. or 105° F.,—the Act does not state.

The following experiments, made with six samples of petroleum spirit placed in my hands by the magistrates of Manchester, will show how important the above question is with reference to the testing of petroleum spirit, and the absolute necessity, for the safety of the public as well as for the interests of those who deal in the article, that the Act should define the exact space of time that should be employed in the testing of any sample of petroleum spirit:—

Sample of Petroleum at 52° F.	Time, 15 minutes.	Time, 20 minutes.	Time, 30 minutes.
1	96° F.	98° F.	102° F.
2	92°	99°	101°
3	90°	98°	101°
4	94°	96°	104°
5	96°	98°	110°
6	95°	99°	108°

These results clearly show the influence of time in raising six samples of petroleum spirit from 52° F. to their flashing-points. Thus, when fifteen or twenty minutes are employed, the whole of the six samples could be called petroleums, according to the Act of 1868, consequently the owner would be liable to a penalty and the loss of the fluids; whilst, if the time employed to heat the liquid is half an hour, they would all be considered *not* petroleums, their flashing-points being above 100° F.

Therefore, there can be no doubt that according to the time employed so are the results altered; the longer an operator is in completing his test, the higher will be the flashing-point of the spirit. This is probably due to the fact, that the most volatile products gradually escape into the atmosphere, and are never in sufficient quantity to produce a flash when a taper, as described in the Act, is passed within a quarter of an inch from the surface of the spirit. I am, therefore, of opinion, that as the Act has been made to protect the public against fire and explosions resulting from the employment of too highly inflammable hydrocarbons, the chemist or person called upon to test liquids of this class, should raise the temperature of the liquids as quickly as possible (of course employing the apparatus described in the Act), otherwise they favour the vendor and manufacturer to the detriment of the consumer.

The next series of experiments were made with a view of corroborating a statement made by Mr. Norman Tate, viz. if two thermometers are placed into the petroleum spirit; one, as indicated in the Act, one and a half inches below the surface of the liquid, the other being only half an inch below the surface, a difference of several degrees will be noticed between them at the time the vapours will flash; and, I am happy to say, the following results confirm Mr. Tate's interesting observations:—

No.	Flashed at	Flashed at
4	94° F., 1½ inches.	99° F., ½ an inch.
5	94° „	98° „
6	95° „	99° „

This curious and unusual fact of a fluid having a much higher temperature near the surface than it has an inch below what may be considered the centre of the bulk of the fluid, is due, in my opinion, to this,—that petroleum, not being a homogeneous liquid, but a mixture of several hydrocarbons, the lightest products being first expelled, they rise and carry the heat towards the surface, and, in this way, the difference in temperature referred to is produced. It is with a view of overcoming this practical difficulty that a series of experiments were instituted, in which the operations were conducted in the usual way, with this exception, that the liquid was kept in a constant state of agitation (except at the time when a flame was passed over to observe the flashing-point) by the thermometer, and the results obtained were as follows:—

No. 1 did not flash at 102° F.
„ 2 „ „ 99°
„ 3 „ „ 98°
„ 5 „ „ 98°
„ 6 „ „ 104°

These experiments appear to me to confirm the explanation above given as to the cause which produced the difference of the two thermometers, placed at unequal depths in the fluids under examination; for it will be observed that the flashing-points of the hydrocarbons are raised several degrees; in my opinion this fact is due to the agitation having facilitated the gradual escape of the most volatile products, the flash will not occur until a sufficient quantity of the more dense vapours have been volatilized and collected on the surface of the liquid to be tested.

I believe many of the anomalies above-described are principally owing to the difficulty, notwithstanding any amount of care that may be bestowed on the operation, in raising the temperature of the petroleum spirit from natural temperatures in a certain time, say fifteen, twenty, or thirty minutes, to their flashing-points; and as the true flashing-points of the fluids depend entirely on the time employed in raising their temperature, I would propose the following method, which will enable every operator, in any part of the United Kingdom, to determine the flashing-point of a petroleum with certainty, and feel satisfied that another manipulator will obtain identical results.

The process consists in heating the water of the outer vessel 10 degrees above the flashing-point of the spirit (approximately tested) in the apparatus such as described in the Act, removing the flames, and then placing the can in the water, filling it at once carefully with the petroleum spirit. The thermometer should then be placed with the bulb half an inch below the surface of the spirit, and the flashing-point ascertained in the usual manner.

The following are the results obtained with the same six samples of petroleum employed in the previous experiments:—

	First experiment.	Second experiment.
No. 1 flashed at	98° F.	99° F.
„ 2 „	95°	96°
„ 3 „	96°	97°
„ 4 „	96°	97°
„ 5 „	96·5°	97°

I am also of opinion that a gas flame should be employed in preference to a spirit-lamp, when the test is made in the manner directed by the Act, as a greater regularity in the rising of the temperature can be secured. I have employed in my experiments, and I advise every one to do the same, the excellent suggestion made by Mr. Norman Tate, viz. a small flame of gas instead of that produced by a match or a taper, for ascertaining the flashing-point. I consider that the apparatus proposed by Mr. Mills would tend to give certainty to the trial, which at the present time cannot be satisfactorily performed. From the above experiments the following conclusion can be drawn, viz. that the Petroleum Act of 1868 does not give sufficient and precise instruction for testing petroleum spirit; and that it is to be hoped that Government will take the matter in hand, and do away with the objections to the present Act, substituting more clearly defined rules and instructions, so as to enable the operator to determine the flashing-point of petroleum spirit with a greater accuracy.

THE MODE OF TESTING MINERAL OILS USED FOR LAMPS.

BY BENJAMIN H. PAUL, PH.D.

The degree of inflammability of the mineral oil now used for lamps is a character which the chemist is sometimes called upon to determine; and since recent inquiries appear to indicate that there is considerable difference of opinion as to the mode in which mineral oil should be tested for the purpose of determining that character, I have thought that this subject, though not one of any scientific interest, would be worth bringing under the notice of the readers of the 'Chemical News,' especially since the degree of inflammability of mineral oil is now attracting considerable attention in reference to the question of danger attending the use of such oil in lamps.

All kinds of mineral oil, whether derived from coal, or bituminous shale, or from petroleum, are, by their nature, more inflammable than the fat oils, such as sperm oil and colza oil, formerly used for lamps, that is to say, they take fire more readily and at a lower temperature than the latter; they also differ from those oils in being partially volatile at a temperature which has no similar effect upon the fat oils. Since the vapour thus given off is inflammable, and, when mixed with air in due proportion, capable of exploding, it is evident that the use of any kind of hydrocarbon oil requires, for both the reasons just mentioned, a greater degree of care than is necessary in the use of fat oils.

In considering the question of danger to be apprehended from the use of mineral oil in lamps, the conditions under which it is used in a general way must be taken into account; and so far as the inflammability of the oil is concerned, the point to ascertain is not merely what oil may be used without any necessary danger, but what kind of oil will answer the purpose for which it is required as an illuminating material without, at the same time, requiring any greater degree of caution in its use than can fairly be expected under the circumstances. Even the more volatile portions of petroleum and paraffin oil, constituting what is generally termed "spirit," or naphtha, benzoline, ligroine, etc., may be burnt without any necessary danger in some of the ordinary paraffin lamps, which are constructed in such a manner that there is no free communication between the flame and the oil reservoir. But this material, which begins to boil below 100° F., and distils over completely below 300° F., while it is readily volatilized at the ordinary atmospheric temperature by contact with air, is much too volatile for general use in that way, except in the special form of lamp known as the "sponge lamp;" and, for that reason, it can scarcely be regarded as a suitable material for burning in what is termed the paraffin-oil lamp. The fact that it can be used in this way serves merely to show that any danger attending the use of mineral oil in lamps is less referable to its volatility and greater inflammability, as compared with fat oils, than it is to carelessness or misuse, and the neglect of those precautions which the nature of this material renders indispensable. But, though the possibility of improper usage cannot reasonably be regarded as justifying any considerable restrictions in the application of a material so useful as mineral oil, still some allowance requires to be made for it; and since, in this respect, the degree of inflammability is the character of the greatest importance, it is customary, in the operation of refining, to separate and exclude from the oil to be used for ordinary lamps, a certain amount of the more volatile hydrocarbons contained in the crude petroleum or paraffin oil. The extent to which this is done is not in all cases the same, and there is some difference of opinion as to what should be the minimum degree of inflammability of the oil, or the minimum temperature at which it should be capable of giving off inflammable vapour, in order to ensure for it such a degree of safety as would be consistent with the general circumstances under which it is used in lamps and kept as a commodity in shops. By some it is considered that when a flame is brought into actual contact with the oil, heated in an open capsule, it ought not to take fire, so as to continue burning, until the temperature reaches 180° F. Others, again, consider that, if it does not take fire at a temperature below 100° F., it is of a character fit to meet all requirements.

Hitherto, far less attention has been paid to the degree of inflammability of mineral oil than to the absence of smell and colour. It has also been customary in different countries to use oil differing widely in regard to the temperature at which it would take fire. Some years ago, the oil generally consumed in this country had a very high firing-point, and it was customary to test it by observing how long it would bear contact with the flame of a match without taking fire, or more accurately by observing the temperature at which it took fire and continued to burn. This temperature was generally from 120° to 130° F., and sometimes it was as high as 150° F. The oils manufactured about eight years ago, from Rangoon petroleum, and from coal or bituminous shale, were of this kind. On the Continent, oil inflammable at a much lower temperature has generally been preferred.

After the introduction of American petroleum, there was a marked difference in the character of the imported lamp-oil manufactured from this material, so far as regards the degree of inflammability, and it would often take fire at a temperature little above 100° F. During the last three years, the firing-point of this oil has been still further reduced, and probably the greater part of the lamp-oil imported from America and made from petroleum, which has been consumed during that period, has had a firing-point below 100° F., sometimes considerably lower.

In addition to the differences, both of opinion and practice, in regard to the degree of inflammability of mineral lamp-oil, there are also similar differences as to the mode of determining this character, and as to what is to be regarded as the firing-point.

This oil being in all cases a mixture of several hydrocarbons, belonging to the paraffin series chiefly, and varying in their boiling-points from about 200° to upwards of 700° F., the temperature at which it begins to give off vapour will depend upon the boiling-point of the more volatile hydrocarbons, and upon the amount of them contained in the oil. Consequently, when the oil is gradually heated in contact with air, and a flame is brought near the surface from time to time, there is always a little momentary flash, produced by the vapour taking fire; and this happens some time before the oil attains the temperature at which it takes fire itself, and continues to burn. The difference between the temperature at which the temporary flash takes place and that at which the oil takes fire, will amount to from 10 to 20° F.

Upon the assumption that an explosive mixture of oil-vapour and air may be formed within the reservoir of a lamp, it has been urged that the temperature of the oil when this temporary flash takes place should be considered as the firing-point of the oil.

The quantity of vapour given off by mineral oil at the temperature when the first temporary flash takes place is generally very small, even when the oil itself takes fire at 100° F.; and as the oil in the glass reservoir of a paraffin lamp, while it is burning, seldom acquires a temperature more than about ten degrees above that of the surrounding atmosphere, there would not be much probability of any such quantity of vapour being produced within the reservoir as could give rise to explosion by contact with flame. In regard to this point, however, the construction of the lamp is of considerable importance. In some lamps the pin by which the height of the wick is adjusted is so arranged that there is free communication between the flame of the lamp and the oil reservoir, and between the two there is a small metal chamber, with a hole at the side, through which the pin passes. This chamber, in common with the other brass fitting of the lamp, being heated to a temperature much above 100° F., will of course become filled with vapour given off from the oil as it passes up through the wick; and that vapour, by mixing with air, may form an explosive mixture in the immediate neighbourhood of the flame. In other lamps the pin is fitted in such a way that there cannot be any accumulation of oil-vapour near the flame, and there is not any communication between the flame and the reservoir, except through the tube in which the wick is placed. The latter form of lamp is in this respect much preferable to the other, and it is the only kind of lamp in which a very volatile oil can be burnt. But the fact of most importance in regard to the determination of the inflammability of mineral by the "flashing-point" is that the result obtained with a given sample of oil in this way, may vary several degrees, according to the mode in which the test is applied. If the surface of the oil is freely exposed to the air, in an open vessel, such as a shallow capsule, the firing-point of the vapour may be found to be some degrees higher than when the test is applied in a small wide-mouthed bottle, or in the reservoir of a paraffin lamp, half-filled with the oil.

The difference before referred to between the temperature at which, in testing oil to ascertain the firing-point, the temporary flash takes place, and that at which the oil itself takes fire and continues to burn, also depends very much upon the mode in which the experiment is made. With a shallow, open basin, the difference is much less than it is when a wide-mouthed bottle or a small lamp-reservoir is used. The more freely the surface of the oil is exposed to the atmosphere, the lower will be the temperature at which it takes fire; while, on the contrary, the less freely it is exposed, the lower will be the temperature at which the vapour given off takes fire. Consequently, in fixing a point of temperature as the minimum at which either the oil itself or the vapour it gives off, should take fire by contact with flame, it is necessary that the conditions under which the experiment is to be made should be precisely defined, and that the testing of oils should always be conducted in the same manner, so as to obtain uniform and corresponding results. It is, of course, desirable, also, that these conditions should assimilate as much as possible to those obtaining in a paraffin-oil lamp when it is burning, since any danger that might arise from the inflammability of the oil would exist chiefly in the ordinary use of this material in lamps.

It is singular, however, that the Act passed in 1868, to amend the Petroleum Act of 1862, prescribes a mode of testing mineral oil under conditions that are the direct opposite of those prevailing in the use of the oil. While a mineral oil lamp is in use, the oil is heated in a closed vessel partly filled with air, which thus becomes charged with oil-vapour, proportionately to the volatility of the oil, or part of it, and to the temperature the oil is raised to. Any oil-vapour given off is confined; and, if the oil be sufficiently volatile or sufficiently heated, such formation of oil-vapour may result in the production of an explosive mixture within the oil-reservoir of a lamp.

On the contrary, in testing mineral oil according to the directions given in the Schedule appended to the Act of 1868, the oil is heated in an open vessel, with the surface freely exposed to the atmosphere. Under these conditions, any oil-vapour formed is liable to diffuse away into the surrounding air, and become thus so much diluted as to lose its inflammable character. Consequently, the temperature at which the momentary flash takes place with any given sample of oil when a flame is brought near its surface, will be, for that reason, higher than when the escape and dilution of the oil-vapour is prevented—as in a paraffin lamp, or by making the test in a partially closed vessel.

A still more serious interference with the results of the test would be experienced if the operation were conducted in a place exposed to draughts; and probably much of the discrepancy in the results of oil-tests has arisen in this way.

But there is yet another source of discrepancy in the results of tests made in accordance with the directions of the Petroleum Act, and one which is of far more importance, because no notice is taken of it in those directions, and, consequently, its influence may be greater or less according to accident or to the practice of the operator. This source of error lies in the rate at which the oil is heated, or the time occupied in making a test. All that the Act directs in this respect is that "a small flame shall be applied to the bottom of the outer vessel," which serves as a water-bath, and that this vessel "shall be filled with cold, or nearly cold water." Both these directions are extremely vague. But, leaving out of consideration any difference that might arise from using "cold" water at 40° F., or "nearly cold" water at 70° F., the rate of heating the oil from either temperature up to 100° F. has such an influence on the result obtained that there may be a difference of quite 5° in the flashing-point of a given sample of oil, accordingly as the heating is made to occupy a longer or shorter time; and this will be the result, even though a "small flame" be used in both cases. Some experiments I have recently made show that there is a possibility of even greater variation in the result obtained as the "flashing-point" of one and the same sample of oil.

Such a defect as this in the prescribed mode of testing mineral oil leaves the practice of this test entirely subject to the option or fancy of the operator; and it is alone sufficient to render the application of the test totally useless for the purpose of determining the character of mineral oil in regard to inflammability, and worse than useless for all the purposes of the Petroleum Act, besides rendering this Act and its application a possible source of serious inconvenience to those engaged in the mineral oil. On these grounds alone, therefore, there seems to be ample need for a revision of the law, and for the adoption of a more suitable test.—*Chemical News.*

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ON THE USE OF ETHER AS AN INTOXICANT IN THE NORTH OF IRELAND.

BY HARRY NAPIER DRAPER, F.C.S.

The number of cases recorded by writers on therapeutics and toxicology, in which ether in its fluid form has been continuously used as a nervous stimulant is very small. Instances are quoted by Pereira (Mat. Med. vol. ii. p. 1965), where it was habitually taken in large doses, but in these it was employed for the relief of physical suffering. One is that of the chemist, Briquet, who took a pint of ether daily, to alleviate the intense agony caused by the intestinal inflammation of which he was dying. Another is that of a gentleman who was in the habit of taking about two ounces daily for the relief of asthma.

An example of the use of ether as an intoxicant is given by Taylor ('On Poisons,' 1st ed. p. 485). In this case, a young man was in the habit of taking large doses of the fluid, which he obtained at different druggists' shops. Its effect was so like alcoholic intoxication that he was brought before a magistrate on a charge of drunkenness. What real ground for the belief there may be, I know not, but there is a widely-diffused popular impression that ether is used as a stimulant by women of the higher ranks of society. The existence of the practice was, for example, alluded to in the 'Daily Telegraph,' only a few weeks since.

But neither these isolated cases of the habitual use of ether,—cases, too, in which the habit has, without doubt, had its origin in the medicinal use of the stimulant,—nor the floating idea that there are fair consumers of *Hoffman's anodyne* and *perles d'éther*, for whom ether has never been prescribed, quite prepare one for the discovery that there is in the northern part of Ireland a number of people who, forswearing alcohol, supply its place with ether; a race to whom ether is what koumiss is to a Kalmuck, ava to a South Sea Islander, absinthe to a certain class of Frenchmen, or gin and whisky to their more immediate neighbours. It is not the medicinal consumption of opium which rules its price, nor the surgical employment of chloroform which makes its production a special manufacture, and not Dr. Collis Browne himself could have anticipated the tide of popular favour which would have set in for his palatable combination of both these anodynes. These are things not difficult to understand, for human nature is impatient of pain, and grasps at any nepenthe which presents itself in pleasing guise; but that any condition of things should arise which should take a nauseous fluid like ether from the pharmacopœia and the laboratory of the chemist, and make it the recognised stimulant of any set of men, and that with them it should supplant alcohol—that they should take "nips" of ether morning, noon, and night, as they would whisky, and—for anything shown to the contrary—drink good luck or ratify bargains in a glass of ether, was not a thing to look for, and is, perhaps, without parallel in the history of narcotic stimulants. The facts, nevertheless, are simply as I am about to state them. They rest upon the authority of a number of gentlemen who, in their respective capacities of physicians, clergymen, ether manufacturers, and druggists, have been applied to to furnish information on the subject, and I here wish to thank these gentlemen for their kindness in replying to the systematic series of questions addressed to them. My especial thanks are due to my friend Dr. William Frazer, who has spared no pains in the endeavour to obtain accurate information, and to the success of whose inquiries I am much indebted.

I should say, also, that my data having been collected from different parts of the North of Ireland, the result is to be taken as the mean of the information obtained, and not as applying to any one locality.

The practice of ether drinking appears to be almost altogether confined to the counties of Londonderry, Antrim, and Tyrone; and the towns in which it most prevails are Draperstown, Maghera (Derry), Cookstown and Omagh (Tyrone). Belfast is the depot to which the ether manufacturers of Dublin, Edinburgh, and Glasgow send the supplies which thence find their way into the smaller towns.

So far as I can learn, the introduction of the practice dates from about five years since, and it is curious in its very origin. While it is only right to say that one of my correspondents attributes it to habit acquired by the medicinal use of the drug in cases where alcoholic stimulants were contraindicated, and another to the desire of "getting drunk more cheaply," I have not found either of these theories to bear examination, and my authorities are, with these two exceptions, unanimous in the opinion that ether drinking is a consequence of the laudable efforts made by the Roman Catholic clergy in inducing their flocks to abstain from whisky. The consumers of ether are said to be nearly all Catholics, and to belong chiefly to the class of small farmers, though the habit certainly prevails among mill hands and other operatives.

The usual quantity of ether taken at one time is from two to four drachms, and this dose is repeated twice, thrice, or even four and six times daily. It is taken unmixed with water—indeed, its very slight solubility in that fluid* would make this a useless precaution; but the usual practice is to take, first, a mouthful of water, then the dose of ether, and again a mouthful of water.

The intoxication produced by ether resembles that of alcohol, but is much more rapidly produced, and is more evanescent. The ether seems to be eliminated entirely by the lungs, as the urine has no odour of it; and, on the other hand, the breath of the ether drinker always affords ample evidence of his addiction to the habit. I am credibly informed that at the fair of Draperstown—which appears to be the paradise of ether drinkers—the prevalent smell is not, as at country fairs, of pigs, tobacco-smoke, or of unwashed human beings, but of *ether*.

I have not been able to learn that, apart from the moral ill effects common to all excitants and intoxicants, the habitual use of ether brings in its train any peculiar evils, and although it would be wrong to draw a conclusion from completely negative evidence, I am disposed to believe that the votaries of ether incur less danger from the habit than ordinary dram-drinkers; and there are two good reasons for this belief. If we assume that there is nothing specifically injurious in the action of ether, it will readily be admitted that, having a definite chemical composition, and not being very liable to adulteration with other fluids, it must be an improvement upon the sophisticated alcoholic potations, which, with these people, it has replaced. Again, the affinity of ether for water is so slight,† that dehydration of the mucous tissue of the alimentary canal, and that apeptic action which so well mark the difference between the effect of ardent spirits and of alcohol in the form of unbrandied wine, cannot be evils attending its ingestion.

All the ether consumed in this way is that which is technically termed "methylated," that is, prepared from methylated spirit. It may be, with some reason, supposed that the action of ether thus obtained upon the human economy cannot be predicated from the known action of ether made from pure alcohol. But although the gaseous oxide of methyl is soluble in ethylic oxide, this body can be present but in small quantity in the ether of commerce,‡ and, though its exact therapeutic action is unknown, can affect the action of the ether but slightly. Indeed, by far the greater proportion of the ether which has been used medicinally for many years past has been "methylated," and is so at present; and though to any one whose senses of smell and taste are fairly practised, the difference in taste and odour of pure and methylated ether are apparent, the quantity of hydrocarbon compounds producing this difference must be exceedingly minute, for they afford no sensible residue on the evaporation of even a considerable quantity of the ether. And, indeed, as the hydrocarbons have a boiling-point considerably above that of water, and as the ether of commerce distils at about 105° F., they would evidently *à priori* contaminate it but slightly. These hydrocarbons might be, perhaps, considered to bear somewhat the same relation to the effect of the ether, as the fusel-oil and fat-acid ethers of whisky and brandy do to the effect of their alcohol.

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* A pint of water dissolves but two ounces of ether.

† 1000 volumes of ether dissolve but 10 volumes of water.

‡ Methylated spirit contains but 10 per cent. of wood spirit, which, in its turn, consists in part only of methylic alcohol.

If methylated spirit had never been introduced, and ether had not been made from it, ether could scarcely have become a popular stimulant in the north of Ireland. And it may not be without interest to look at this fact for a moment, from an Inland Revenue point of view. Methylated spirit is absolutely exempt from duty, and especial legislation provides against the profitable exercise of chemical ingenuity in rendering it potable. But the authorities concerned never could have foreseen that the cheap ether which is so great a boon to practical chemists would ever find a place in the shops of grocers and publicans. The wholesale price of a pound of ether made from pure spirit is 5*s*., but a pound of methylated ether is sold in Tyrone and Derry for 1*s*. 6*d*. As there are about seven and a half pounds in a gallon of commercial ether, a gallon costs 11*s*. 3*d*. Now, if we assume the ordinary quantity taken at one time to average three drachms, and this quantity to be (in stimulant effect) the equivalent of half a glass of whisky, we arrive at the result that three gallons of ether supply the place of ten gallons of whisky, which, at fifteen degrees under proof, pay duty to the amount of £4. 5*s*., while the ether pays nothing. It is very difficult to arrive at any accurate idea of the extent to which ether is consumed in the north of Ireland. Omagh is said to take about 400 Winchester quarts (equal to 250 gallons) yearly, and one Dublin manufacturer has sent to Belfast at the rate of 4000 gallons yearly. Now, if for the sake of illustration, this latter quantity be taken as the total consumption of the North, the excise suffers by the practice to the extent of £5666 per annum. These figures must, however, fall immeasurably short of representing the total consumption. The excise authorities have, I understand, attempted to interfere, but, of course, without success, as there is no present legal restriction affecting the sale of ether, whether pure or methylated.

This subject, too, cannot fail to be of interest to insurance companies, whose risks must be enormously increased by so dangerously inflammable a liquid being stored under the most unfavourable conditions, and handled by people so ignorant of its properties as country spirit dealers must necessarily be.

Though I have put together all the facts which a careful consideration of the subject seemed to make the chief objects of inquiry, I have the disadvantage of not possessing personal experience—of not having visited an ether-drinking district. This deficiency I hope, ere long, to make good, but, in the meantime, I trust that those of my readers who reside in such districts, will be induced to make public any facts or statistics which come within their knowledge.

I am indisposed at present to make any generalizations, but even at this early stage of the inquiry, it is impossible not to be struck with its forcible illustration of the fact, that if men are deprived, or deprive themselves, of any one form of nervous stimulant, they will, sooner or later, replace it by another. And, in the words of Liebig, I would ask those who may be hastily disposed to look upon this practice of ether drinking as utterly vicious and harmful, first to inquire, "whether it depend upon sensual and sinful inclinations merely, that every people of the globe has appropriated some such means of acting on the nervous life; from the shores of the Pacific, where the Indian retires from life for days, in order to enjoy the bliss of intoxication with coca; to the Arctic regions, where Kamtschatdales and Koriakes prepare an intoxicating beverage from a poisonous mushroom."

CHAPTERS FOR STUDENTS.

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The design of this and of the papers which will follow it is to give an outline of the chief facts and laws of physics, in so simple a manner as to include no more than those portions of each subject which every pharmaceutical student ought to be acquainted with. They are compiled in the hope that they may be found useful to those to whom they are now offered.

HEAT.*

1. Heat is a term applied indiscriminately to a certain cause as well as to certain effects. We say that we feel heat when we experience certain sensations; but we also give the same name to the something which causes the sensations. In natural philosophy it is best to limit the use of the term to this hidden cause; *heat*, then, is that which tends to produce change of temperature, and consequently, excess or deficiency of it to make us feel hot or cold.

2. Heat is present wherever matter exists. Hot and cold are merely relative terms; the temperatures with which we are commonly concerned being included within a certain narrow compass, which forms only part of a long scale, to which there are practically no limits either way.

3. The *sensations* of heat and cold depend, in some measure, upon the previous condition of the part of the body subjected to the test. If the right hand grasp a piece of ice for a few minutes, and it be then plunged into water at the temperature of the room, the water will seem to be warm. If meanwhile the left hand has been plunged into warm water, the water just tried with the right hand and found warm, will to the left seem to be cold.

4. It is necessary to distinguish between *quantity of heat* and *change of temperature.* Increase of heat is the *cause* of rise of temperature. Removal of heat is the cause of fall of temperature.

5. Increase or diminution of heat gives rise either to change of physical state (*i. e.* solid to liquid or gaseous, or *vice versâ*) or to change of temperature. The former will be referred to hereafter. The most striking accompaniment of the latter, that is, of change of temperature, is the expansion or contraction of volume which results.

Examples such as the following, illustrate this statement:—

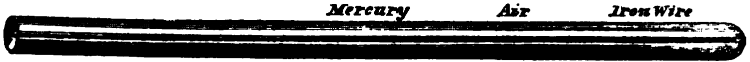
A bar of iron may be selected of such a thickness that, when cold, it will just pass through a ring; made very hot, it will no longer do so.

In very hot weather clocks with ordinary pendula lose; in cold weather they gain time. The reason is, that the pendulum is longer when warm, and shorter when cold. If made longer, its vibrations are slower; if shorter, its vibrations are quicker.

If cold water be poured into a flask to the brim, some of it will run over when the flask is placed upon a hot plate. Upon cooling again, there will be no longer sufficient water to fill the flask.

An india-rubber ball, partly filled with air, will swell up and become completely distended when placed near a fire.

6. The difference of bulk, caused by an equal change of temperature, is greater in liquid than in solid bodies, and greatest of all in aëriform bodies (gases and vapours). A simple experiment will show this as well as, in a rough way, the amount of expansion or contraction. A needle with the point broken off, is introduced into a piece of tubing of small bore (*e.g.* coarse thermometer tubing), to which it fits, and after it a small quantity of mercury, in such a way that they enclose between them a column of air: let the three be of the same length. Close the tube at the end of the needle.



Suppose them to have been adjusted at the temperature of freezing, and that the apparatus is plunged into boiling water. If each measured in the first instance 100 millimetres, a scale applied to the tube when it has been thoroughly heated by the water, would indicate something like the following :—

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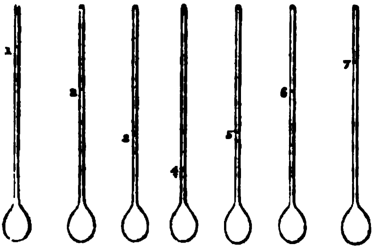
* To be followed by Light, Electricity, Magnetism.

At Freezing Point. At Boiling Point.
100 millims. iron become nearly 100⅛
,, ,, mercury ,, ,, 102
,, ,, air ,, ,, 137

It is assumed that the containing tube itself undergoes no change; in reality it becomes larger, but not visibly so.

7. All solid bodies (with one or two exceptions) expand with rise of temperature, and in growing larger generally do so more in one direction than in another, especially if possessed of "structure," as in the instances of wood and most crystals.



All liquids, except water, expand upon the application of heat to them. But water near the temperature at which it crystallizes does not acknowledge the rule. This may be shown by having a bulb blown upon a tube and filling it with water. Upon plunging it into water in which some ice is floating, the height of liquid in the stem (1) will continue to fall down (2, 3) to a certain point (4), where it will stop, and, as the temperature of the water continually goes down, will rise again steadily to another point (7), where it will remain fixed so long as the temperature is unaltered.

If this water were cooled still further, it would freeze. The act of freezing or solidifying is accompanied by a still further increase in bulk. Ice is, therefore, lighter than the coldest water, and floats in it.

The great importance of this in nature is obvious :—If ice were heavier than water it would sink to the bottom of the sea and rivers, and there would be out of reach of the sun's influence, so that, probably, all but the torrid zone would be eternal winter.

8. The influence of rise of temperature in gases is remarkable from its producing practically equal effects, as to volume, upon all of them. Further, if a gas be heated through any given range on a thermometric scale, it will dilate; and if, whilst in this state, its temperature is further raised by an accession of heat equal to the former, the new increase of volume will be in the same proportion as the former increase.

If the tube in par. 6 had been plunged not into boiling water, but into a mixture of equal parts of ice-cold and boiling water, so that a temperature halfway between might be obtained, the length of the column of air would have increased not to $100 + 36{\cdot}6$, but to $100 + 18{\cdot}3$. So that by halving the increase of temperature, the proportion of bulk added is also halved. In a similar way, if we were to divide the increase of temperature by 100, the increase of volume would also be divided by 100. Upon the Centigrade thermometer the range of temperature between the freezing and boiling points of water is divided into 100 equal "degrees." Referring again to our experimental tube :—Since the 100 millimetres of air at the lowest point become 136·6 when at the highest point, they would become for one of these degrees (that is $\frac{1}{100}$th of the interval), $100 + \frac{36{\cdot}6}{100} = 100{\cdot}366$.

Generally, if one measure of air be taken at any temperature, it becomes $\left(\frac{100{\cdot}366}{100} =\right)$ 1·00366 when at a temperature one degree Centigrade hotter.

This number is the same for all gases; it should be recollected.

9. When a body is heated it expands, that is, it occupies a larger space than before. It is, therefore, lighter than before; for any portion of it measured out contains less substance than before, and so weighs less. Ice, which is solidified water, expands in the process of its formation; it is, therefore, lighter than the water in which it is formed, and, as said before, it floats.

Hot water poured steadily upon cold water will remain uppermost for some time; and cold water introduced in a thin stream into a vessel of hot water will sink to the bottom.

The fire-balloon consists of a balloon with a wide orifice below, in which is suspended a sponge wetted with spirit of wine. On setting fire to the spirit, the balloon, if not too heavy, will rise; the air within becoming heated, is thereby expanded, hence it is lighter than the cold air surrounding, and tends to rise through it.

The smoke of a fire goes up the chimney by the same kind of action; it is carried up by the warm, and consequently ascending, current of air.

In measuring liquids, and especially gases (as in the determination of their specific gravities), it is, therefore, necessary to take into account differences of temperature, and to correct the results accordingly.

10. Instruments by which we can measure the extent of expansion in certain selected bodies (usually liquids), upon increasing the heat in them, are called thermometers. The word denotes "heat-measurer;" but this is not strictly correct, because we have no means of knowing for certain whether equal rise of temperature indicates truly equal increments of heat.

The ordinary mercury thermometer consists of a very narrow tube terminated by a bulb, and sealed by fusion at the opposite end. The bulb contains mercury, which partly extends up the tube. It is obvious that if the quantity of mercury in the bulb is very much greater than that portion which extends into the tube, a very slight change in bulk, that is, in apparent quantity, will be shown by the movement up or down of the liquid in the stem. The thermometer is marked and graduated by ascertaining in the first place the points at which the mercury in the tube stands at two widely-separated temperatures, which are known to be invariable. These temperatures are those of melting ice and steam from boiling water.*

11. The interval between these two points is divided into equal parts, called degrees; the number of which is different, according to different systems. Those of Fahrenheit and Celsius (commonly called centigrade) are the only ones of importance here. The point at which the mercury stands in melting ice is made the zero, 0° upon the centigrade, and 32° upon the Fahrenheit thermometer. The interval between this and the higher point, ascertained by the dilatation caused by exposure to steam, is made 100° centigrade or 180° Fahrenheit. With the latter, then, the higher point marks 212 degrees.

100° centigrade mark the same change of temparature as 180° Fahrenheit; a degree centigrade is, therefore, greater than a degree Fahrenheit in the proportion of nine to five.

To calculate any number of degrees upon the one scale into its equivalent upon the other, the following expressions should be recollected:—

$$\text{No. of centigrade degrees} = \frac{5}{9}(\text{no. of F. deg.} - 32)$$

Example:—To convert 50° F. into centigrade.

$$C = \frac{5}{9}(50 - 32) = \frac{5}{9} \times 18 = 10^\circ$$

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* Under a pressure, as indicated by the barometer of about 30 inches of mercury. For the method of filling, etc., see Attfield's 'Chemistry,' p. 458.

$$\text{No. of Fahrenheit degrees} = \frac{9}{5}\,(\text{no. of C. deg.}) + 32$$

Example :—To convert 50° C. into Fahrenheit.

$$F = \frac{9}{5} \times 50 + 32 = 90 + 32$$
$$= 112^\circ$$

12.—

F.	C.	
662	350	Mercury boils.
640	337·7	Sulphuric acid boils.
212	100	Water boils.
176·8	80·4	Benzol boils.
173·1	78·4	Alcohol boils.
142	61·1	Chloroform boils.
98	36·6	Blood heat.
94·8	34·8	Ether boils.
60	15·5	Volumetric solutions, etc., to be measured.
39·2	4	Water at maximum density.
32	0	Ice melts.

CHEMICAL NOTES TO THE PHARMACOPŒIA.

Under this heading will be presented a series of notes explanatory of, and supplementary to, the chemical portion of the official Materia Medica. When complete, they will include an exposition of every important principle and theory in modern chemistry which it is desirable for pharmaceutical students to understand. They will also furnish all that is required of this subject either for the Minor or Major Examination.

Introduction.

Natural objects are variously classified, but they all agree in one particular, viz. that they consist of a certain limited (though very large) number of distinct kinds of substance. The separation of these kinds from each other, and the study of them both in the pure state and also combined together, constitute the province of chemistry.

When a substance has been obtained which, whatever we may do to it, refuses to resolve into two or more simpler kinds, it is called an "element." This term is, however, only provisional; those which we at present call elements may be capable of undergoing decomposition, though at present we are ignorant of the agent or method required.

Chemical combination must not be confounded with mere mixture; hydrogen and oxygen gases, for example, may be mixed together in any proportion, but such a mixture differs in every respect from water, or the vapour of water, in which substance they are in the state of chemical union.

One of the most important differences between the two cases is this: the gases may be *mixed* together in any proportions at will, but the analysis of water always gives a measure of hydrogen twice as great as that of the oxygen. This invariable character extends through all cases of chemical combination.

Since only sixty-five elements are known, it is plain that, to form the apparently innumerable different compounds of them with which we are acquainted, some must unite in several proportions. Many examples of this may easily be found in the various compounds of oxygen with the metals; *e. g.* 25 parts of mercury with 1 part of oxygen form the black oxide, whilst 25 parts of mercury with 2 parts of oxygen form the red oxide.

When a compound is taken, and one of its constituents is removed, the residue or remainder is generally capable of combining with other bodies. The ratio between the quantity of the constituent replaced and that of the body replacing is always the same when the same pair of bodies is concerned, and is that in which they will themselves, under other circumstances, combine together. Thus, when water is converted into hydrochloric acid by the action of chlorine, 71 parts of this element take the place of 16 parts of the oxygen in combining with the hydrogen. 71 parts of chlorine are therefore "equivalent" to 16 parts of oxygen, and will combine with them when placed under suitable conditions.

The three laws deduced from the above general statements may be put more concisely as follows:—

Law of Definite Proportions.—A chemical compound is always formed of the same elements united in the same proportion.

Law of Multiple Proportions.—When one element unites with another in *several* proportions, the quantities so uniting bear to each other a simple relation.

Law of Equivalents.—"When a body, A, unites with other bodies, B, C, D, the quantities of B, C, D which unite with A represent the relations in which they unite among themselves, in the event of union taking place."

In order to exhibit more plainly the changes which bodies operate upon each other, and their mode of combining together, symbols are employed. The symbol of an element is simply the initial of its name. But chemists employ these symbols, not only as a kind of shorthand, but to express certain weights and volumes of the various elements. The symbol for chlorine being Cl, this stands for 35·5 grams weight of chlorine. Similarly, H represents 1 gram weight of hydrogen; O represents 16 grams of oxygen; S, 32 grams of sulphur; and so on. These numbers are found by noticing the proportions in which the different elements combine together.

The symbols have, beyond this, an additional significance; they stand for 11·2 litres of the gases which would be formed by taking any of the elements, and, if they are not already in the gaseous state, bringing them into that condition, and measuring them all at the same temperature. So that—

H	stands for	1 gram	or	11·2	litres of	hydrogen gas.
Cl	„	35·5 grams	or	11·2	„	chlorine gas.
O	„	16	„	11·2	„	oxygen gas.
Br	„	80	„	11·2	„	bromine gas.
I	„	127	„	11·2	„	iodine gas.
		etc.		etc.		etc.

We see from this two important things. First, when different gases combine they do so in volumes which are either equal, or there is some very simple ratio between them, such as 2 to 1, or 3 to 1, or 2 to 3, and the like. Secondly, we see that the specific gravities of the different elements, taken when in the state of gas, are proportional to their combining weights.

REVIEWS.

THE QUINOLOGY OF THE EAST INDIAN PLANTATIONS. By JOHN ELIOT HOWARD, F.L.S., F.R.M.S., F.R.H.S., Member of the Pharmaceutical Society of Great Britain, of the Botanical Society of France, etc. London: Lovell Reeve and Co. 1869. Pp. x. 48, folio, with three Coloured Plates.

It has been truly said that whatever spontaneous forest products civilized nations derive exclusively from native tribes, will, sooner or later, fail, and recourse must at last be had to cultivation. Such is the case with the trees which produce quinine-yielding barks. Traveller after traveller has borne witness to the reckless destruction of the *Cinchonæ*. Delondre and Weddell, during their journeys, both speak of it; the latter, in writing on the subject, says,—"If no means be adopted to arrest this destroying agency, posterity will have to regret, if not the total disappearance, at least the gradually-occurring scarcity of the various kinds of quina;" and again, "The only remedy is cultivation, and it is absolutely necessary to have recourse to it."

To Dr. Royle seems due the honour of first advocating the introduction of *Cinchonæ* into India, but it was not till 1859 that active measures were taken in this direction. Mr. C. R. Markham was authorized by Lord Stanley, the Secretary of State for India, to make such arrangements as should best ensure the success of the enterprise. Such was the enormous consumption of quinine in India, that in 1857 alone the Indian Government expended no less than £12,000 on this article. Thanks to the energy of Mr. Markham, Dr. Spruce, and others connected in the enterprise, the introduction of these plants into India was successfully accomplished, and the book before us affords evidence of their successful cultivation there.

The first ten pages are taken up with explanatory matter with regard to the plates. Next follows, "Part I. Chemical and Microscopical Investigations," consisting of thirty pages, closed by an Appendix and Additions, being extracts from papers and correspondence on the subject.

Under the head of "Chemical and Microscopical Examinations," we have much interesting matter. In opening, Mr. Howard pays a well-deserved compliment to Mr. M'Ivor, the Superintendent, and to Mr. Broughton, the Quinologist to the Government Cinchona Plantations in the Neilgherries. Of the latter gentleman he says,—"It may be permitted me, as having previously given what assistance I could render in the analysis of the specimens sent home from various parts of India, to bear my unbiassed testimony to Mr. Broughton's skill and diligence, as evinced by what he has already accomplished in a particularly difficult line of chemical investigation."

It appears that below 4000 feet above the sea it is useless to attempt to cultivate these plants. According to Mr. M'Ivor, the *Cinchona succirubra* has found in the Neilgherries a home quite as favourable to its full growth and development as in the Andes. This species, together with *C. Peruviana* and *C. micrantha*, thrive from 4000 to 6000 feet; *C. officinalis*, *C. Bonplandiana*, and *C. crespilla*, from 7000 to 8500 feet. If the red bark be cultivated at above 7500 feet, it yields only about 2 per cent. of alkaloid, destitute of quinine and quinidine.

If the Crown barks, too, be cultivated below 6500 feet, the alkaloidal contents of such barks is less, and the quinine replaced by cinchonidine and quinidine. Thus it will be seen that great care is necessary in adapting the plants to the proper elevation.

The remarks on "the change of place of growth as affecting successive generations of *C. officinalis*" are very important; indeed, the whole success of the undertaking hinges on the satisfactory solution of the question. That by the change no deterioration of value, but rather the reverse, has taken place, is proved by the following:—In 1859, Mr. Howard received seeds and bark of a tree of *C. officinalis* from Uritusinga (Peru). This bark yielded by analysis oxalate of quinine 1·87, cinchonidine 1·20, and cinchonine ·04. From these seeds plants were raised by Mr. Howard, the bark of which yielded sulphate of quinine 1·36, cinchonicine ·57. One of these plants, 6 feet in height, was given by Mr. Howard to the Indian Government, which, after losing all its leaves by sunstroke in India, and with difficulty recovered by Mr. M'Ivor, yielded in India oxalate of quinine 1·40, uncrystallized quinine ·17, cinchonicine ·79, being thus partly grown in England and India. From this plant a third generation was reared, which by analysis gave sulphate of quinine 1·75, sulphate of cinchonidine 1·50, cinchonine ·08, thus showing an even greater percentage than the original bark. From this single specimen sent out to India, thousands of plants have been reared. This percentage has, however, been excelled by Indian-grown bark, yielding 10 per cent. of quinine, as analysed by Messrs. Broughton and Howard.*

The effect of sunlight on the *Cinchona* is very remarkable. Of "red bark," grown under dense shade, the proportions were sulphate of quinine 1·48, cinchonidine ·61, cinchonine 2·54. Of bark from trees of the same age, but grown in full sunlight, the analysis afforded on examination was sulphate of quinine 2·35, uncrystallized quinine ·95, cinchonidine 1·11, cinchonine ·58; the quinine in the latter being doubled, and the cinchonidine much reduced.

The first trial importations of bark from India took place in August, 1867, consisting of bark of *Cinchona succirubra*, yielding Dr. De Vrij 6·8 per cent., 2·85 being quinine, and the remainder mostly cinchonidine. Two small chests of bark of *C. succirubra* and *C. officinalis*, of only three years' growth, reared in Ceylon plantations, was sold by public auction in April, 1868, in London, and commanded a higher price than South American barks of the same age and species, being found richer in alkaloids than the latter. But the growth of the *Cinchonæ* is slow, and cultivators would have had to wait a long time before any return could be expected on their capital but for the happy idea of Mr. M'Ivor of "mossing the bark," by which means partial decortication can take place without injury to the tree. Mr. M'Ivor thus describes his process:—"In removing the strip of bark, two parallel cuts should be made down the stem, at the distance apart of the intended width of the strip of bark; this done, the bark is raised from the sides of the cut and drawn off, beginning from the bottom; care being taken not to press or injure the sappy matter (cambium) left upon the stem of the tree. This cambium, or sappy matter, immediately granulates on the removal of the bark, and being covered, forms a new bark, which maintains the circulation undisturbed."

Next follow remarks on the cambium layer, and mode of renewal and origin of the renewed bark. If a piece of bark be stripped off carefully, and the decorticated wood preserved from desiccation and atmospheric influences—by moss, for instance,—the cambium exudes in small drops, gelatinous in appearance and consistence; these become hardened into a new bark of a very perfect development. These renewed barks are found to yield an alkaloid in greater abundance and purity than the original. There has been much discussion with respect to the seat of the alkaloid. Mr. Howard and Mr. Broughton find that it is contained in the largest proportion in the cortical portion of the bark, and not in the liber or fibrous portion. Thus the inside portion of the bark of *Cinchona succirubra* yielded 4·29 per cent., whilst the outer cortical portion yielded 10·66 per cent. Mr. Broughton gives the proportions of the inner and outer portions as 3 to 5. Not only light and air affect the production of the alkaloids (shade favouring the production of quinine, and the former cinchonidine), but it is found the alkaloidal yield varies with the seasons, the maximum yield being between the beginning of February and end of March.

As to the final success of the acclimatization, Mr. Howard is of opinion that by avoiding errors in the choice of species, and by carefully selecting the best situations and modes of culture, individual planters in other parts of the world will see their efforts crowned with remunerative results.

Though the Crown barks are more difficult to adapt to altitudinal situation, and a third less rapid in growth than the red bark, yet they are found to be the most valuable, yielding, as they do, quinine in greater purity, and free from the resin so difficult to get rid of in the "red bark."

The plates consist of 23 figures of the microscopical appearance of red and Crown barks, beautifully drawn and coloured by Mr. Tuffen West, the well-known artist. Plate 1 represents bark of *C. succirubra*, showing the effect of growth in dense shade, which favours suberous growth; in sunshine and under moss, the latter being remarkable for the quantity of alkaloid *in situ*. Plate 2 consists of figures of "renewed bark;" and plate 3 of the third crop of renewed red bark, and of unrenewed and renewed quills of *C. officinalis*. One histological feature we notice with considerable interest in this plate, is the existence of scalariform tissue in the renewed red bark.

Mr. Howard very conveniently sums up the conclusions he has deduced from the study of the question, in which he says the cultivation of the *Cinchona* promises complete success, and will prove remunerative, if attention be paid to selection of species, and the cultivation be properly conducted, and that Mr. M'Ivor's plan of mossing is an important discovery in the direction of intelligent culture.

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* Pharmaceutical Journal, vol. x. p. 624, second series.

We have said enough, we trust, to show how interesting this book is, and Mr. Howard deserves the best thanks of the world, not for the present publication only, but for his long and patient study of the subject in all its bearings,—studies which place him in the front rank among living quinologists, and renders his opinion on all questions connected with the subject of the greatest value and importance.

THE CANADIAN NATURALIST AND QUARTERLY JOURNAL OF SCIENCE.

We have received some numbers of this publication, and are well pleased to find the name of an old friend among those of the contributors to its pages. Dr. J. B. Edwards, formerly of Liverpool, but now of Montreal, is not only chairman of the committee of publication, but appears to be one of the principal writers for its pages. We congratulate him on having found in the New World so congenial a field for the exercise of his literary talent.

BRICK TEA.

From an interesting paper in the 'Food Journal' for March, on the economic uses of brick tea, we glean the following facts:—

The manufacture of brick tea appears to have been in the hands of the Chinese until within the last nine years, but it is now made to a large extent by the Russian agents at Kiachta. It takes three forms, "large green," "small green," and "black bricks," and is made from the coarser leaves and upper twigs, to which are added much of the broken leaf and dust resulting from green-tea manipulation. The mass is simply moistened by the application of steam, then compressed in wooden moulds, having the "chop" of the manufacturer cut in relief on one of the inner surfaces. The bricks are then piled up in stacks protected from the sun and rain, but having a free current of air circulating through and around them. When quite dry, each brick is enveloped in paper, 36 bricks, built into an oblong figure, are covered with dry fragrant leaves, and the whole matted over; such packages are known as "baskets." This form of tea is of a dusky green colour. The Mongol buyer tests the soundness of his purchase by placing a brick upon his head and pulling the extremities downwards with both hands; should it neither yield nor break, it is considered sound. Occasionally a similar test is applied over the bended knee.

In Mongolia and Tartary the method of preparing brick tea for drinking is as follows:—The leaves are rubbed to fine powder, boiled with alkaline steppe-water, to which salt and fat have been added, the decoction being carefully decanted. Of this liquid the nomadic races drink from twenty to forty cups per day, mixing it first with milk, butter, and a little roasted meal, upon which they are said to maintain perfect health.

Obituary.

On the 18th of March, at 16, Hanover Square, Arnold Rogers, Esq., F.R.C.S., in his 72nd year. Mr. Rogers began life as a chemist and druggist, and always took a warm interest in the progress of the Pharmaceutical Society. In 1850, he contributed an important paper "On Amalgams for Stopping Teeth," which was read at one of the meetings of the Society. In the dental profession Mr. Rogers took a very high position, and was greatly esteemed by all who knew him.

BOOK RECEIVED.

A PHARMACEUTICAL GUIDE TO THE FIRST AND SECOND EXAMINATIONS. By JOHN BAKER SMITH. London: John Churchill and Sons, New Burlington Street. 1870.

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the EDITOR, 17, *Bloomsbury Square, as early in the month as possible, and in no case later than the 20th of the month, if intended for publication in the next number.*

Sir,—The expectation of improved *status* which appears to have possessed pharmaceutists for some time, and to have received fresh impulse from recent legislation, is one with which I am not disposed to quarrel. It may be, that the anticipations are sometimes extravagant, and that they err in looking outside for that which can only come from within; but this misapprehension time will correct, and meanwhile the aspiration can scarcely fail to exert an elevating influence, even if there be a little inversion in its estimate of cause and effect. But while we look hopefully forward we cannot afford to neglect the present, nor to permit practices without reprehension, which are calculated to lower us as a body, and to stultify our claims to professional consideration. Such claims must ever be of a qualified degree. Pharmacy can never be other than a trade or business. Buying and selling, and even the manipulation of drugs, is not a profession, and it would be vain, in every sense of the word, for us to exalt our own importance to the extent of expecting professional rank or professional remuneration for the discharge of such duties. But, on the other hand, there is attached even to these trading operations a degree of responsibility which lifts them out of the category of ordinary trades, and there are naturally associated with the practice of pharmacy many functions strictly professional and demanding professional qualifications. In so far as we approach to this higher standard individually and collectively shall we be entitled to higher consideration, but it must depend upon the manner in which we fulfil our vocation what our status shall be.

It is not surprising, when we consider the debased position of pharmacy hitherto, that its ethical obligations have been insufficiently acknowledged; we have been and still are prone to regard them from the trade point of view, hence the existence of certain unfortunate practices which have too long escaped censure, until it is to be feared that they have reached to a formidable extent amongst us. I refer to the reprehensible practice of selling homœopathic medicines, as a department of pharmacy. If we look at this practice from a professional point of view, we shall instinctively feel how unbecoming it is, and shall be driven to acknowledge that it cannot be fitting for pharmaceutists who aspire towards professional status.

Suppose a physician advising upon a patient's case. His diagnosis is made, the malady is ascertained, the treatment is obvious. He commences by advising such remedies as his experience has shown to be appropriate, when the patient interposes and requests to be treated upon homœopathic principles (so called). Is there any question as to what a professional man ought to do in such circumstances? If he says, "I disbelieve entirely in what you call homœopathic principles, and cannot consent to trifle with your malady by prescribing that which science, reason, and common sense tell me can have no possible influence"—he might, perhaps, lose his patient, but he would not forfeit his respect, and what is more to the purpose, he would not sacrifice his own. But suppose him to say, "I do not recommend homœopathy. I even believe that it is a gross deception, but if you are resolved to be treated upon that system, my best services shall still be yours." We should scarcely think that we characterized his conduct with sufficient energy if we called it "unprofessional." *Mutatis mutandis*, the parable applies to ourselves. The physician and the pharmaceutist have different claims to professional status, but whatever they may amount to in either case, they are equally forfeited by such abnegation of principle. It destroys our pretensions to be anything better than hucksters, ready to sell whatever may find a profitable market, including our consciences in the miscellaneous catalogue. It is nevertheless a fact which we must not affect to ignore, that many pharmaceutists of respectable standing have yielded (for lack of a little moral courage it must be) to this demoralizing traffic, and have thereby brought scandal upon their craft. In all kindness and earnestness I would implore them to take a more just view of their duties and of their interests. So long as homœopathy stood alone, there was nothing to fear from it, beyond a temporary fashion. Like all other things, it must ultimately stand or fall by its merits, for fashions do not last long, and we can easily estimate its prospects of permanence upon that score. But when *we* proclaim ourselves ready to traffic in truth or error with equal alacrity, provided only that we put money in our purse, we cannot make the shams real, but we do give such an air of unreality to the whole, that the world may well doubt if it be anything more than a seriously played farce, got up for the benefit of the actors, and the mystification of the beholders. They may possibly deduce another inference from this over-eagerness to make money all round, obviously in defiance of conscience and consistency; they may not unreasonably conclude that the pharmaceutist who humbugs one customer *with* his consent, may humbug the rest for his own profit, and that he who *knowingly* sells innocent sugar-plums for deadly aconite, may not scruple to supply cheap powdered slate for costly scammony; and it is not surprising if physicians or patients in search of reliable allopathic remedies prefer to seek them where these handy-dandy pranks are not performed. Such instances, I think I know.

This leads me naturally to a subject of secondary importance, upon which nevertheless I would take the opportunity of making a few remarks, viz. the preferences which medical men exhibit for certain pharmacies to the prejudice of others. No doubt we have all experienced this at times, and have probably exaggerated its influence and misjudged its motives. To a certain extent, and within proper limits, such preferences are not only right, but they ought to prove encouraging. It would be very disheartening to zealous pharmaceutists if they could not hope that conspicuous merit would secure for them the confidence of the profession and of the public. It would be the rankest socialism to begrudge these fruits of meritorious labour; the same path is open to us all, and the reward never yet met any at the outset of his career. So long, therefore, as preference is based upon this ground it is beyond challenge; it may even be the duty of the physician, who certainly is bound, not less than an advocate, to make his client's welfare superior to all other considerations: and those who suffer must bide their time, while they lay the foundations of similar confidence. But unfortunately there have been such things as alliances between medical men and pharmaceutists altogether outside of these laudable motives; alliances not formed for the protection of the patient who relies implicitly upon his doctor's suggestions, but for selfish considerations of mutual profit. Such alliances are not only unprofessional and dishonourable in the professional man, they are equally dishonourable in the pharmaceutist; and it is clear, therefore, that instead of railing at the profession for their share in these discreditable arrangements, we have it in our own power to put an end to them by setting up and obeying a purer code of pharmaceutical ethics, which would teach us that such combinations are unfair. We are all ready enough to condemn these things when they operate against us, perhaps a little prone to invent them when they have no existence. Such clamour amounts to nothing but self-condemnation, unless we are equally resolved not to benefit by them. It is of no use to stigmatize them as unbecoming a professional man and a gentleman, unless we are determined to repudiate them as pharmaceutists resolved to act and feel as gentlemen.

Your obedient servant,
RICHARD W. GILES.

Sir,—Now that the Council's proposed Regulations for the keeping and dispensing certain poisons are open for full discussion, trial, and criticism, I should like to add my iota of opinion and suggestion to the common fund. I feel assured that unless the Council is disposed to allow a much wider liberty than the adoption of either of the proposed regulations, such, for instance, as the combination of the three, it will meet with generally, if the majority is to rule, successful opposition. The following ideas have been suggested to me by this circumstance. Soon after the new Pharmacy Act became law, in consequence of the inconvenience felt amongst chemists generally, at having to label "Paregoric elixir" and "syrup of poppies," poison, Messrs. Silverlock and Co. (I believe it was that firm) issued a small, neat label, having a black ground, red border, and red letters, bearing the following inscription:—"In conformity with the Sale of Poisons Act 1868, this preparation must be labelled poison, but its composition remains unaltered." This label being especially intended for opium preparations, I have adopted the plan of placing one of these labels on every bottle containing a preparation of morphia or opium. Apart from the fact of this label being originally intended for opium, there are among the tests for this drug and its alkaloid certain reactions which indicate the colour to be a very happy one. This label then, meeting the eye, associates the mind with opium, and nothing else.

Might not, with very great advantage, a label with a green ground, and white letters be brought out, which should be placed on arsenic, and all its preparations? The scientific mind (and all chemists are cultivating that now) naturally associates arsenic with green. For prussic acid, I think, nothing more is necessary than what I believe is generally adopted. Large bottles sent out by wholesale druggists are very characteristically covered with blue paper, and the smaller bottles used in dispensing I believe are always blue, tied over and inverted. However, for it and all cyanides we might have a blue label. Cyanogen and blue naturally go together. In my own opinion were the suggestion I have thrown out adopted, and I think there would be no inconvenience in its being so, it appears impossible, without the most culpable carelessness, to substitute either of these three poisons, or their preparations, for each other, or for any other poison. If a mistake occurred, it would do so by the substitution of a wrong preparation of the substance intended.

Now if, with a mere glance of the eye, the dispenser or retailer, without reading the label, can see that he is dealing with arsenic, opium, or cyanides,—I say if such unavoidable knowledge as this is not sufficient to make him careful enough to be sure that he takes the right preparation—he is most inexcusably guilty of grossest negligence, and deserving of its penalty.

If these few remarks which I have humbly offered meet with a moderate amount of approval, I shall feel they have not been made in vain.

Yours truly,
JOHN INGHAM.

Upper Tooting, March 16, 1870.

Dear Sir,—Permit me to call the attention of pharmacists to clause 3 of the Amended Pharmacy Act.

"Nothing contained in section seventeen of the said recited Act shall apply to any medicine supplied by a legally qualified medical practitioner to his patient, or dispensed by any person registered under the said Act, *provided* such medicine be distinctly labelled with the name and address of the seller, and the ingredients thereof be entered with the name of the person to whom it is sold or delivered in a book to be kept by the seller for that purpose."

Is not a medical practitioner bound to register in a book, and label with his name and address, any medicine dispensed containing poison? If I am correct, is it not desirable, by an official communication, to intimate this to the members of the medical profession?

In many instances, prescriptions and medicines are dispensed by them, not only to their own patients but to customers sent to their surgeries by other medical practitioners; and I am of opinion that by the clause referred to, the same legal requirements apply to apothecaries as to pharmacists.

I am, yours respectfully,
W. J. HALLIDAY.

Manchester, March 18, 1870.

PRESCRIPTIONS AND DISPENSERS.

Sir,—Having been for some thirty years or more conversant with the arts and mysteries in the business of a chemist and druggist, I must, at the eleventh hour, express my surprise and disgust at the careless and reprehensible way in which some medical men will order certain preparations; for let us make use of the very best means possible, it is quite impossible to prevent accidents happening. I shall be very glad if some of my pharmaceutical friends will give me their opinion in the next Journal, as to how they should have proceeded in the following case:—A short time since the following prescription, from a medical man, was brought me to dispense by a respectable customer, and who told me, that "a friend of his had given identical copies of it to several others for the same complaint,"—toothache:—

R. Ext. Cannab. Ind. ʒi
Ext. Cicutæ gr. x
Ext. Cinchon. ℈ij
Ext. Opii ʒij

Aqua, Alcohol, and Syrup q. s. ft. ℥j. Ten drops to be taken three times a day.

Now ten drops of this solution will contain 2½ grains opium and 1¼ gr. cannab. ind.; this repeated three times a day, will be more than equivalent to 10 grains pure opium.

Another case of gross carelessness on the part of a medical man. Not a great while since, a professional man, possessing the important titles of "M.D.," "B.A.," and "F.C.S.," prescribed for a delicate female, as an emetic, ½ oz. sulphate of zinc instead of ½ drachm, and would not be convinced by argument that he was wrong, until he referred to his books, but then admitted *I was right*. I do think that the old proverb of "what's sauce for the goose," etc. should apply and be inflicted in such cases; and I would reasonably ask why it is, that although we as dispensers and chemists (who, as a rule, are as well educated as these medicals) should be subject to prosecution, and they, however gross their mistakes, are let off scot-free? It is very satisfactory to learn, by an analysis of Mr. Burrell's in this month's Journal, that out of 301 fatal cases of poisoning *during the last ten years*, only 26 are traceable to *vendors* of medicines. I have been much amused, too, at the absurd practice of some chemists attaching the poison-label to ½ oz. or 1 oz. bottle of paregoric; this unnecessary practice must tend to curtail the sale of a useful preparation among all classes of society, and for their information I would refer them to a letter from the Medical Department of Privy Council to the Secretary, *vide* 'Pharmaceutical Journal,' April, 1869, clearly showing that such practice is unnecessary.

I am, Sir, yours very truly,
GEORGE MANBY.

Southampton, March 17th.

Sir,—Would you kindly allow me to insert these few remarks in the columns of your valuable Journal? Firstly, upon the undercharging of medicines. A prescription, a copy of which I enclose, viz.:—

℞. Pulv. Argent. Nitratis gr. x
Ext. Nucis Vomicæ gr. x
Ext. Belladonnæ gr. x
Ext. Aloes aquosæ gr. x
M. Divide in Pil. xx.
One to be taken three times a day.
℞. Bismuthi Alb. ʒij
Sodæ Carbonatis ʒiij
Aq. Menth. Pip. ad ℥x
Sp. Ammon. Aromat. ʒvj
Syr. Zingiberis ʒss
Acid. Hydrocyanici ♏40. M.
Take one tablespoonful three times a day.

—was brought to us to dispense, but before so doing the customer wished to know the price of it. Upon naming the price, which was 2*s*. 6*d*., the customer was greatly astounded, saying, that he had it made up by one of the chemists in Coventry for 1*s*. 5*d*. Here is now an example of the undercharging of medicines, which has lately been of great annoyance to the trade; two other such complaints I find in the November number of the 'Pharmaceutical Journal' for 1869. If such are to be the prices charged for dispensing medicines, I think it high time for those who have been at so much trouble and expense in qualifying themselves to set up in business as chemists and druggists, to shut up their shops, and resort so some other means of getting their living. I deem it impossible for any young man to be successful in his trade as a chemist and druggist, while other men in business charge such low prices for compounding prescriptions as those in the instance I have named. Secondly, upon the Pharmacy Act of 1868, as regards the sale and dispensing of poisons, ought not the mixture which contained acid. hydrocyanici ♏ 40, be labelled with the word "Poison?" but such was not the case on the bottle, where it had been previously dispensed at Coventry. Hoping that I may see a time when the Society will have no men on the Register of Chemists and Druggists, who do so much injury and injustice to their fellow-tradesmen as those I have alluded to,—I am, Sir, yours truly,

A. P. S.

SP. CHLOROFORMI *v.* SP. ÆTHERIS CHLORICI.

Dear Sir,—Will you pardon my occupying a small space in the pages of your Journal upon the ever troublesome controversy. What does the physician mean when he writes spiritus ætheris chlorici?

According to the Preface of the British Pharmacopœia, we are told the intention of the work is "to afford to the members of the medical profession, and those engaged in the preparation of medicines throughout the British Empire, one uniform standard and guide," and "not so much the selection as the definition of substances which the physician prescribes, and which are required to be kept at one safe and uniform standard of strength and composition." It is self-evident that if this most desirable end is to be attained, it must be by a strict adherence, not only to the composition of the preparations, but also to the nomenclature by which they are distinguished.

The responsibility of carrying out the former duty rests with the pharmacist, but upon the medical profession essentially devolves the latter, and non-attendance to this all-important duty, not only puts upon us, as dispensers, unnecessary difficulty and uncertainty, but also incurs the risk of patients being supplied with medicines varying most materially in strength and appearance.

It is a well-known fact, that there being no authorized formula for sp. ætheris chlorici, its strength varies most materially, from 1 in 7 to 1 in 16; the consequence is, that when the rule, which many houses adopt, is observed, of using either sp. æther. chlor. or sp. chloroformi, according to whichever may be written in the prescription, a mixture would be presented to the customer totally differing in strength and appearance to that which would be received from another house, where, the orders of the Pharmacopœia being attended to, spiritus chloroformi is adhered to as the only authorized preparation.

Mr. Squire, in his 'Companion to the British Pharmacopœia,' seems to solve the difficulty by the following note, "Formerly called chloric ether, and of various strengths," clearly implying that sp. chlorof., a definite and uniform preparation, is to take the place of, and supersede the unsatisfactory and doubtful chloric ether.

The remedy appears to be twofold, as regards ourselves as pharmacists, to adhere to the Pharmacopœia preparation; as regards the physicians and surgeons, for the subject to be personally brought before their notice, and the difficulty clearly pointed out. The necessity for adopting the proper name would then be apparent, and the obsolete term would cease to trouble us.

I am, Sir, faithfully yours,
EDWIN B. VIZER.
63, *Lupus Street, Belgravia South,*
March 21*st*, 1870.

TRADE "INQUIRIES."

Sir,—I think the recipe published in your February number for Jockey Club Bouquet, is of rather too expensive a character to come under the appellation of "Utile." It struck me at first sight there might have been an error in printing, and that the quantity of otto should be ʒiss, instead of ℥iss, but as no correction has been published I have no right to assume this really to be the case. The following receipt makes a good and inexpensive article:—

Ess. Iridis. ʒv
Ess. Cassie } of each ʒx
Ess. Tubereuse }
Ess. Ambergris }
Ol. Bergami ʒss
Otto de Rose ʒi
S. V. R. ℥xiv.

The ess. iridis is a capital body for perfumes, it is made by adding 1 pint of S. V. R. to 1 lb. of orris in coarse powder, to stand a month and press off; or by percolation in the ordinary way.

In reply to H. M. D., an "inseparable lime juice and glycerine" may be made thus:—

Lime-juice ½ pint (10 oz.)
Rose Water ½ pint
S. V. R. (added gradually) 2 oz.

Shake well together, after twenty-four hours strain through muslin, and add—

Ol. Limonis ʒss
Ol. Lavand. ♏xv, dissolved in S. V. R. ʒiv
Lastly add Glycerine (Price's) f℥iiss.

Shake well for some time (Cooley). This makes a semi-transparent liquid.

If it be required to make the thick, opaque, white liquid, sold under the name of "Limes and Glycerine," take equal parts of—

Liq. Calcis
Ol. Amygdal.

Shake well together, and add perfume to taste.

Now with reference to cinnabar of antimony, although not wishing to dispute the facts of the case, as stated by Mr. George Cocking, still I am strongly disposed to dispute his inferences, and to believe that in *very many cases* in which cinnabar of antimony is ordered it is far safer to use a sulphuret of that metal than a sulphuret of mercury; and I have, I think, more than once proved the correctness of this in my own experience.

I often use the oxysulphuret of antimony (antimonium sulphuratum) where I should not like to use vermilion most certainly, and I think if I err, it is on the right side; it is quite possible I may be in error as regards my views in this respect.

Yours respectfully,
W. C. H.

York, March 22, 1870.

Sir,—Now that chemists and druggists form one body, and will, in the lapse of time, be entirely "pharmaceutical," would it not be advisable to alter the price and the period of publication of the 'Pharmaceutical Journal,' so as to make it accessible to all, the poor as well as the rich? The price, I have no doubt, is for many a hardship, especially apprentices and assistants. Yet it is very desirable, and for harmonious working, absolutely necessary that your learned pages should be in the hands of every one connected with the trade.

It has long struck me that chemists want an organ that shall be to them what the 'Lancet' is to surgeons, not only a guide and instructor but defender. The 'Pharmaceutical Journal,' by being made a weekly organ, could take up this position. The many advantages that would accrue from a weekly issue are obvious. The monthly advertisements would appear weekly; novelties would be made known to the trade at once; the opinion of the whole trade on trade questions would be obtained instead of a part; the interests of chemists would be defended while the enemy was assaulting, and not after he had triumphed; masters, assistants, business buyers and sellers would not have to wait a month to make known their wants, and all (now legislation affecting chemists is becoming microscopical) would have a common friend to appeal to in difficulty.

The present form of the Journal might be retained, the only change being less matter, a lowering of price (say 2*d.* or 3*d.*), and a weekly issue. Trusting my suggestion will bear fruit,

I am, Sir, your obedient servant,
Niemand.

March 17, 1870.

Sir,—Allow me to suggest the following formula for preparing mucil. tragac. as an improvement on that of the B.P., and Mr. Martindale:—

℞. Pulv. G. Tragacanth. ʒj
Glycerini f ʒvj
Aqua ad f ℥x.

Gummi primum cum glycerino in mortario tere, deinde cum aqua paulatim instillata.

This will produce a mucilage *at once*, without the objectionable air bubbles incidental to agitation, and there can be no objection to glycerine.

Also permit me to say it is my humble opinion that tinct. aurantii may be prepared far better by percolation than by the present process of maceration; for I, and others, find maceration for seven days and pressing brings out a certain quantity of matter, which is, after a short time, deposited on the side and bottom of the vessel containing the tinctures. This is not the case when prepared by percolation, etc., and the *aroma is far superior*.

I am, Sir, yours obediently,
H. E. Godfrey.

45, *Curson Street*,
March 16, 1870.

Chlorodyne.

Sir,—Your correspondent "Provincial,"

in the February number of the Journal, appeals to me to give him an assurance respecting the amount of hydrocyanic acid contained in chlorodyne. This being our busy season, I have not, at present, had an opportunity of repeating the analysis, nor do I think there is really any necessity, as the amount given has been arrived at, after examining many bottles of the original compound.

I may, however, say, that the percentage of hydrocyanic acid (possibly owing to its volatility) is not always identical. The first sample I examined was taken from the large dispensing bottle, which had been opened, perhaps a score of times, and this contained less acid than a recently opened bottle taken from stock, and this latter again differed from a new supply especially obtained for examination.

Edward Smith.

Torquay.

Sale of "Vermin Killers."—In reply to several correspondents on this subject, we may observe that the legal question is one for a lawyer to decide; but we subjoin an extract from the letter of a correspondent on the same subject, which we think a fair interpretation of the Act in relation to the point in question. "It appears to me that the question rests on this point, viz. whether you sell sheep dipping as a 'preparation of arsenic,' or as a compound containing a poison, within the meaning of the Pharmacy Act 1868, prepared for the destruction of vermin. As it is a secret preparation, I am not bound to know whether it is arsenic or corrosive sublimate that it contains, and I can therefore treat it as either, or as a vermin killer. A poison label, without registration, I think is sufficient in cases of poisons in packets for specified purposes, to prevent misadventure."

"*An Associate*" (Canterbury).—In the case referred to, the "poison label" is unnecessary, see "Regulations" in the February number. Clause 8. *Dispensing.*

'Rhamnus catharticus," alkanet root is used for the pupose.

"*Garlands*" (Colombo).—The examinations must be passed in this country.

W. L. G.—Yes; in the case referred to, the individual has been a member of the Society for many years, and every member is a Pharmaceutical Chemist.

T. C. L. (Chatham).—No; see reply to "An Associate," above.

"*A Member by Election*" (Hertford).—The regulations referred to are legally in force. See note above on the "Sale of Vermin Killers."

"*Gomer*" (Burnley).—Patent medicines are exempted.

R. H. (Wisbeach).—"*Microcosmic salt*" was obtained by the early chemists from urine, hence, probably, its name, as man was called the microcosm, or little world, see "The last will and testament of Basil Valentine, printed in the year 1671." The significance of the term will be seen from its application in the following passage from Ralegh:—"Because in the little frame of man's body there is a representation of the universal, and (by allusion) a kind of participation of all the parts there, therefore was man called *Microcosmos*, or the little world."—*History of the World.*

W. A. S. (Leicester) should apply to the Secretary for a copy of the 'Regulations of the Board of Examiners.'

J. S. S., who wishes for information respecting the sale of spirit of wine for medicinal purposes, is referred to Vol. VII. (N.S.), p. 467. (3) No. 1.

"*Resurgam*" (Coventry).—A knowledge of both systems is required.

"*A Chemist*" (York) has sent a communication on the "Patent Medicine Licence," but we think he will admit, on referring to the proceedings of the Council, as reported in our last number, at page 511, that the resolution then passed renders the publication of his letter, and others of a similar purport, unnecessary.

"*Inquirer*" wishes to have a formula for making syrupus ferri calcis et sodæ phosphatis.

T. S. (Merthyr Tydfil).—In making infusions with boiling water, the vessel should not be kept hot during the process, by placing it near a fire, but allowed to cool, by the radiation of the heat.

J. C. (Newcastle).—Very uncertain.

G. W.—We think the label as sent, with the word "only" struck out, would be safe. We cannot answer the question respecting "Whelpton's pills," as much would depend upon the circumstances under which they were sold. If sold under that name, and advertised as a proprietary medicine, or recommended for the cure of any disease, we believe they could not be legally sold in any quantity without a stamp.

C. J. C. (Greenwich).—(1) Burnt sugar. (2) *Rhus copallina.*

C.—See reply to J. S. S. above.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to Elias Bremridge, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. Churchill, New Burlington Street, London, W.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. XI.—MAY, 1870.

THE PROPOSED REGULATIONS FOR STORING POISONS.

The forthcoming Annual Meeting of the Pharmaceutical Society bids fair to rival all preceding ones in the interest of the matter to be discussed thereat. There is more life and energy in our proceedings, now that the compulsory clauses of the Act of 1868 are in force, than there was when we only spoke hopefully of being one day able to regulate the practice of pharmacy authoritatively, and it is a good sign when men, rousing themselves to a sense of their duty and responsibility, come forward, some on the one side and some on the other of a question to discuss its merits, and bring various experiences to aid in a decision. "*Question put and carried unanimously*," reads well, and implies universal harmony; but we confess that we regard the thorough ventilation of a question as more conducive to ultimate good.

Among the subjects for consideration on the 18th inst., none, perhaps, is more important than the "proposed regulations for the keeping and dispensing of poisons." On no question, except indeed the Pharmacy Act itself, do we remember to have had so many communications from our provincial correspondents; therefore we doubt not that those who have written adversely will put in an appearance to support their views.

That there should be difference of opinion can excite no surprise, seeing that there is, and must be, an equal difference of circumstances in various establishments. We are not, however, prepared to admit the opinion so often expressed, that a London chemist knows nothing of the style of business conducted by his brethren in the country, because, after all, the London chemist, in a vast majority of cases, is but a countryman transplanted.

We believe the proposed regulations furnish ample evidence of this in the *alternatives* they offer to suit all circumstances. So many alternatives indeed, that one at least of our correspondents regards the fact as an error of the Council, thinks the three systems cannot be equally good, and that one only should have been selected and enforced. Those who join in this judgment will probably appear also to support it.

On the other hand, the chemists and druggists of Leeds have put forth "a statement of objections" in an exactly contrary direction, and as their paper will, in all likelihood, form the outline of the discussion when the question comes before the Annual Meeting, it is desirable that those who feel interested in the regulations should well consider the present position of affairs. We mean the position of the Pharmaceutical Society in its double relation, to the Government and public on the one side, to pharmacists on the other.

Bill after Bill brought into Parliament by successive Governments was opposed by the Society on the one plain ground that education was ignored in it; that any ignorant person might, under them, have sold poisons of the power of which he knew nothing, provided only he observed certain regulations in their sale and keeping. It was not that these regulations were in themselves bad, but that *by themselves* they gave a false security. An angular bottle might draw attention to the presence of poison, even in the hands of an unqualified man, but still might not lead him to discriminate between strychnia and morphia. Not so with a dispenser alive to his business: the very touch of a strange bottle, the fact of having to unfasten the leather covering of a stopper would suggest danger. Therefore when education was made the groundwork of the Act to regulate the sale of poisons the Pharmaceutical Society cheerfully accepted it, bound itself to co-operate with the Government in promoting the safety of the public, and, as it seems to us, has proposed these alternative modes of keeping as alarums to arouse possible sleepers.

It does not appear either from the Leeds statement or from the many letters addressed to us, that these regulations are deemed useless; but simply that they are insufficient. It seems even that in almost every important house in the trade some such precautions are already adopted.

The objections urged are rather that the proposed regulations would be found inapplicable in many cases, inasmuch as chemists are, according to the requirements of their various localities, or the character of their business, compelled to store poisons in large quantities in warehouses as well as in small quantities in shops; that some poisons require to be kept under special conditions as to dryness, etc.,—conditions unsuitable for others; that the option of distinctive bottles, or bottles tied over "*in a peculiar way,*" would be inapplicable to many solid poisons, and would consequently leave no choice of storage; that in the case of such liquid poisons as syrup of poppies and paregoric no bottles answering the requirements could be obtained which would hold a few gallons; that wholesale dealers cannot be exempted from observance of the regulations. Doubtless all these different points will be discussed, but it seems to us that the objectors entirely overlook the fact that the various modes prescribed are *optional*. A chemist may adopt one for his strychnia, another for his morphia, and a third for his arsenic. There is but one rule declared to be universal, namely, that each poison shall be labelled with its proper name and the word "poison." If it be deemed convenient to keep strychnia, or any other poison, in a compartment specially devoted to dangerous articles, it may be kept in one of the ordinary bottles of the shop. If, on the other hand, it is necessary to leave it on the open shelves of the store, it must be either in a bottle differing in shape or character from its neighbours, or in a bottle of which the stopper is guarded by being tied over. The proposed code seems to us to admit of all this liberty of action, or, if not, it could be easily made to do so. As to the *size* of the bottle needed for paregoric (which, by the way, we should never think of storing as a dangerous article), there can be no more difficulty in capping a two-*gallon* than a two-*ounce* bottle. Then, as to some poisonous leaves or roots which require certain conditions of storage, it is not said that all shall be kept in bottles, but the word "*package*" is expressly used to meet such cases.

Even for wholesale dealers we see no insuperable difficulty; a couple of paint brushes, one red, the other blue, would, in a few minutes, stripe the arsenic cask into a very distinctive harlequin. We know of no special reason why large packages should not be as carefully guarded as small ones; and, indeed, when we remember that arsenic has been supplied instead of plaster of Paris for the adulteration of lozenges, and that the carbonate of ammonia bottle of the shop was once filled with cyanide of potassium by mistake in the warehouse, we cannot conscientiously say precautions are not needed.

"That a variety of lozenges, pills, etc., may still be regarded as legally within the description of poisons" we do not believe, and on that point we simply say that those who would apply the regulations to such things would be doing mischief. There is a "spirit of the law" as well as a "letter of the law"!

When we come to the 6th clause of the Leeds paper, which complains "that the list of legally-defined poisons does not by any means comprehend all preparations liable to serious mistake in dispensing," and asserts that the dispenser who "may now treat them in a precautionary manner would be committing a breach of the law by adopting towards them any of the three methods prescribed by the regulations," we say, not merely that the assertion is untrue, but that it is the very reverse of truth; and, in confirmation, we refer to the first regulation, which says, *not* that the legally-defined poisons shall be kept in a compartment by themselves, but in a compartment "*set apart for dangerous articles.*" We know that these words were advisedly used to avoid this very difficulty, and that chemists should not be relieved of that discretionary power, or, rather, duty, without which all the laws and regulations of the statute book would be useless.

We perfectly agree in the opinion, that the penalty of £5 would be but an insignificant portion of the punishment falling on the chemist whose apprentice neglected his duty, and so caused mischief; for that very reason, we believe every chemist should cheerfully accept such rules and contrivances as would lessen the chance of error on the part of his apprentice; and as regards Lord Campbell's Act, an observance of these rules would be presumable evidence that due care had been exercised, thereby lessening the chance of conviction in case of accident.

But does "no sort of obligation rest upon the Pharmaceutical Society to make such enactments in the interest of the State"? Surely yes! Has not the Pharmaceutical Society received *privileges* under the Act of '68, and are not those privileges accompanied by *duties?* We do not anticipate that our Secretary will be walking into every chemist's shop to overhaul his bottles, but we do feel that, in cases of accident, the observance or non-observance of the rules laid down by the Society, will go very far with Judges and Juries, and, knowing this, chemists will soon find means to observe them without the smallest inconvenience.

In the full belief that advantages as well as disadvantages will discover themselves in the forthcoming discussion, we repeat our hope that the attendance at the annual meeting on the 18th will be larger than we have ever yet seen in Bloomsbury Square.

THE CONVERSAZIONE.

In compliance with the frequently-expressed desire of many of our members, an arrangement has been made by which an entirely new character will be given to the Society's Conversazione, to be held this month. It is proposed that the meeting should be graced by the presence of ladies; and as the rooms of the Society in Bloomsbury Square would not afford the accommodation required for the introduction of this new element, the Council have obtained, from the Lords of the Committee of Council on Education, permission to meet their friends in the SOUTH KENSINGTON MUSEUM. It has also been decided to hold the Conversazione on the evening of the day on which the Anniversary Meeting of the Society will be held.

We feel assured that this new arrangement will give general satisfaction. The splendid museums of South Kensington will afford ample space for such a gathering as may be expected on this occasion; and as the presence of ladies will bring with it the further attraction of music, while the various works of art so profusely displayed in the courts and galleries of the Museum, including the collection of paintings presented to the nation by the late Jacob Bell, will be objects of interest to those who have not already become familiar with them, we think we may safely promise to our friends, both of town and country, an opportunity of spending an agreeable social evening, of associating with men whose pursuits are kindred to their own, and of entertaining as visitors many eminent scientific men, who will honour the meeting with their presence. It should be understood that the circumstances under which this conversazione is to be held will render it necessary that all those present should be in evening dress, and that Members and Associates, as well as visitors, should be provided with cards of admission. The arrangements for the issue of cards are described elsewhere; and it is hoped that early application will be made for them, so that the Committee may know what numbers they are to provide for.

The active co-operation of our members is looked for on this occasion, with the view of giving to the meeting such a character as shall conduce to the credit of the Society, and thus tend to ensure the success of an undertaking which is adopted as an experiment, and which, if it succeeds, will no doubt be followed by similar entertainments in subsequent years. As the important feature in the new arrangement is the introduction of ladies, some of our country members may, we hope, be induced to further this object, and thus contribute to a successful result.

A VOICE FROM THE PRELIMINARY.

Three of the First or Preliminary Examinations have been held since the establishment of the revised regulation, and before this is in print another will have been gone through.

It is almost impossible for an attentive observer to note the result without being struck with the number of those who did not pass, and the large proportion of the second and third when compared with the first day's examination; and the questions naturally arise, How is this? Is the examination made progressively difficult, or are the candidates not so well informed? That the examination, taken as a whole, was not more difficult in the second or third than in the first seems pretty clear from questions published in the 'Pharmaceutical Journal,' though possibly one or two of the questions may have been.

To put the case fairly before the reader, a little explanation may be desirable. The examination comprises three subjects, Latin, arithmetic, and English; to each subject a standard number of marks is allotted, the pass-number being one-half. Any candidate obtaining half the standard number of marks passes, provided he does not obtain less than one-fourth in any subject; should he do so, but make up the pass-number by excellence in the other subjects, he is then only required to come up again in the particular subject in which he failed to obtain one-fourth,—so that a candidate rather backward in Latin, but efficient in arithmetic or English, may easily make up the number of marks required; and thus deficiency in one subject may be made up by efficiency in another. The questions in the two last examinations were more in number than in the first; each question has its value affixed, and failure in one may be balanced by success in another; *ergo*, the larger the number of questions within limit, the greater the chances of success. Again, though desired, it is not absolutely required that the answer be entirely correct; one part may be good, another not so. Marks are given to the value of the answers taken as a whole, so that every facility is allowed, within reason, by the Board of Examiners, and justly so, inasmuch as the Preliminary Examination is not a qualification to practise, nor a competitive prize examination, but simply to determine that a youth has been fairly educated for the business upon which he is about to enter. That the questions are not beyond ordinary capacities is evident, because in the first, where the Latin was the most difficult of the three subjects, 32 candidates out of 40 passed; in the second, 66 out of 105; and in the third, 103 out of 193. That the time allowed is not insufficient seems apparent, as some of the papers containing the answers were written, and well written, by many within the time. How is it, then, that so many fail, so many more than one could expect?

The following reasons are suggestive.

1st. The candidate has never received at school the amount of instruction required.

2nd. Has not benefited thereby to the extent he should have done.

3rd. Having left school one, two, or more years, has not in the meantime kept up his store of knowledge by practice.

4th. Has not attentively and sufficiently considered the nature and extent of the Examination, and worked accordingly.

Now for the supposed remedy for these failures. The original quality of the education being deficient, the task will be difficult; little short of close, private instruction will avail; but where the groundwork is good, there should not be much to overcome. The nature of the examination being known, it would be well for each candidate, whether the time be long or short since he left school, whether confident or otherwise, to look attentively over the first book of Cæsar; also the Latin grammar in reference to nouns, adjectives, verbs, etc. Let him refresh his memory by working at the four first rules of arithmetic, simple and compound, vulgar fractions and decimals; then let him attack English grammar, work up spelling, and try his hand at composition; let him do this for six or even twelve months, during a portion of his time for recreation or cessation from actual business, and he certainly will not fail: indeed, "in the vocabulary of youth there should be no such word as fail."

Where half-a-dozen candidates or students can meet in any town, let them form themselves into an evening class, if possible, examine and question each other; or better still, if some employer would take them in hand, read to and translate with them sentences from Cæsar, etc., give them sums to do, set grammatical questions and revise the answers, so encourage and help the willing student, and there would not be half the failures. Let all who take apprentices, if the Preliminary has not been passed, make it part of their duty to put them in the way of regaining their forgotten schoolboy's knowledge, and by questioning, etc., at seasonable times, diminish the chance of failure. A question asked and the answer given and explained, will be impressed upon the memory and recollected when pages simply read are easily forgotten. That these observations may assist future candidates and encourage to further exertion any who have failed is the sincere wish of

PHARMACEUTICAL LEGISLATION IN AMERICA.

The Pharmaceutical Chemists of Great Britain may congratulate themselves at having set an example in securing a certain amount of restriction on the practice of pharmacy in this country, an example which is now apparently exciting the emulation of our brethren on the other side the Atlantic. Throughout the United States efforts are being made to secure a law or laws which shall embody four general principles; three out of which constitute the basis of our own Act of Parliament. The first two bear upon the qualification and registration of chemists and druggists, another has reference to the sale of poisons, and the fourth to the adulteration of drugs.

The following extracts from the draft of a Bill framed by a Committee of the American Pharmaceutical Association, will show how closely the compilers have studied the British Pharmacy Act of 1868, and what a high degree of confidence they appear to repose in its practical working qualities.

1. The proposed law recognizes all persons actually in business on their own account at the passing of the Act as entitled to be entered as registered pharmacists.

2. All persons not then in business on their own account will have to submit to an examination, or become graduates in pharmacy, before they can become registered pharmacists.

3. All who are neither graduates nor (examined) practising assistants are, in the eye of the law, still apprentices.

4. After an apprentice becomes a graduate or examined practising assistant, he may become a registered pharmacist by opening a store.

5. The incorporated Colleges of Pharmacy and Pharmaceutical Societies shall submit the names of twenty pharmacists, or professors in Colleges of Pharmacy, out of whom the Governor shall appoint seven persons, who shall constitute the Examining Board.

6. A Registrar is to be appointed.

7. A Register is to be kept. In this book the names entered will be under four classes:—
    - A. In business prior to the passing of the Act.
    - B. Graduate in Pharmacy in a recognized college.
    - C. Practising Assistant in Pharmacy, examined by the Pharmaceutical Board of the State.
    - D. Registered Assistant in Pharmacy.

8. None but registered pharmacists shall keep open shop for retailing and dispensing of medicines and poisons. However, in rural districts, where there is no registered pharmacist within three miles, retail dealers may procure licenses as retailers of poisons (as enumerated in the Schedule), and all sales of poisons by persons so licensed are to be recorded in a book kept for that purpose.

9. Poisons are to be properly labelled, and entries of sales made in a book; but this is not to apply to the ingredients in prescriptions of qualified medical practitioners.

10. Persons practising adulteration of any drug or medicine, guilty of a misdemeanour, and liable to a pecuniary penalty and imprisonment.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *April 6th*, 1870,

MR. HENRY SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

MR. HASELDEN, VICE-PRESIDENT.

Present—Messrs. Abraham, Bottle, Bourdas, Carteighe, Deane, Hills, Morson, Randall, Savage, Squire, Stoddart, and Williams.

The minutes of the last meeting were read and confirmed.

The Secretary reported that he had received the following names, members of the Society, in nomination as Candidates in the election of Council for the ensuing year and who had accepted:—

ABRAHAM, JOHN, 87, Bold Street, Liverpool.
ATHERTON, JOHN HENRY, Nottingham.
BARNES, JAMES B., Trevor Terrace, Knightsbridge, S.W.
BETTY, SAMUEL CHAPMAN, 51, Park Street, Camden Town, N.W.
BOTTLE, ALEXANDER, 37, Townwall Street, Dover.
BRETON, WALTER, 137, Cannon Street, E.C.
BROWN, WILLIAM SCOTT, 113, Market Street, Manchester.
EDWARDS, GEORGE, Dartford, Kent.
EVANS, HENRY SUGDEN, 60, Bartholomew Close, E.C.
CARR, JOHN, 171, High Holborn, W.C.
GISSING, THOMAS WALLER, Wakefield.
GREENISH, THOMAS, 20, New Street, Dorset Square, N.W.
GROVES, THOMAS B., Weymouth.
HANBURY, CORNELIUS, Plough Court, Lombard Street, E.C.
HASELDEN, ADOLPHUS FREDERICK, 18, Conduit Street, Regent Street.
HORNSBY, JOHN HARWOOD, Odiham, Hants.
QUILLER, CHARLES ROWETT, 148, Sloane Street, W.
REYNOLDS, RICHARD, 13, Briggate, Leeds.
SANGER, WILLIAM ALBERT, 150, Oxford Street, W.
SAVAGE, WILLIAM DAWSON, 30, Upper Bedford Street, Brighton.
SAVORY, CHARLES HARLEY, 143, New Bond Street, W.
STACEY, SAMUEL LLOYD, 300, High Holborn, W.C.
STODDART, WILLIAM WALTER, 9, North Street, Bristol.
STOTT, WILLIAM, Sowerby Bridge, Yorks.
SUTTON, FRANCIS, Bank Plain, Norwich.
WILLIAMS, JOHN, 5, New Cavendish Street, W.
WOOLLEY, GEORGE STEPHEN, 69, Market Street, Manchester.

The Secretary reported that he had received no nominations for Auditors, whereupon it was moved by Mr. Hills, seconded by Mr. Morson, and

Resolved—That the following Members of the Society be nominated Auditors for election at the ensuing Annual Meeting:—

FREDERICK BARRON, Bush Lane, Cannon Street, E.C.
WILLIAM HODGKINSON, 127, Aldersgate Street, E.C.
JOHN B. MACKEY, 15, Bouverie Street, E.C.
WILLIAM SQUIRE, 5, Coleman Street, E.C.
ROBERT WESTWOOD, 16, Newgate Street, E.C.

The Report of the Finance and House Committee was presented, showing on the General Fund account a balance in the Treasurer's hands of £1176. 11*s.* 5*d.*, and submitting for payment accounts, salaries, etc., amounting to £964. 5*s.* 11*d.*, and on the Benevolent Fund account a balance of £292. 17*s.* 10*d.* The Treasurer was requested to pay the usual quarter's annuities, amounting to £75.

Resolved—That the Report be received and adopted, and payments made.

Moved by Mr. Carteighe, seconded by Mr. Williams, and

Resolved—That the salary of the Assistant Secretary be increased to £200 per annum.

The Report of the Library, Museum, and Laboratory Committee was then read and received.

CONVERSAZIONE.

In reference to the ensuing Conversazione, the Committee reported that, taking into consideration the invitation of ladies, and the difficulty of providing accommodation at the house of the Society for the extra number of visitors, they had put themselves in communication with the Lords of the Committee of Council on Education for permission to have the use of the South Kensington Museum, and that such permission had been granted.

Resolved—That the ensuing Conversazione be held on the evening of the Annual Meeting, 18th May, at the South Kensington Museum, instead of at the Society's house, on the 17th of May, as resolved at the last meeting of the Council.

On the recommendation of the Committee, the following regulations were adopted:—

That each Member of the Society be supplied, on application, with a ticket to admit himself and lady.

That each Associate and Apprentice of the Society be supplied, on application, with a ticket of admission.

That each Chemist and Druggist on the Register be supplied, on application, with a ticket to admit one.

That the list of invitations be revised and extended.

JOURNAL AND TRANSACTIONS OF THE SOCIETY.

The Report and Proceedings of the Committee in reference to this matter having been read, it was moved by Mr. Carteighe, seconded by Mr. Williams, and

Resolved—1. That Messrs. Taylor and Co. be employed to print the Journal for the ensuing year, as per specification and estimate tendered, with new type as agreed.

2. That Messrs. Spalding and Hodge's tender for paper for the ensuing year be accepted.
3. That the size of the Journal adopted be super-royal 8vo.
4. That the publishing price be 4*d.* per copy, and that Members, Associates, and Apprentices be supplied with a copy gratis as heretofore.
5. That the edges be trimmed.
6. That the Journal be issued without the cover, half of the advertisements to precede, and half to follow, the text.
7. That the table of contents be placed at the top of the front page, and the official notices on the same page below.
8. That Messrs. Churchill and Sons be the publishers for the ensuing year, on the terms specified.

Moved by Mr. Savage, seconded by Mr. Stoddart, and

Resolved—That the Report of the Library, Museum, and Laboratory Committee, having reference to the publication and conduct of the Journal be approved; and that a copy be furnished to the present editors.

A draft of a Bill, to enable persons registered as Chemists and Druggists in Great Britain to exercise their business in Ireland, was considered and agreed to.

Moved by Mr. Abraham, seconded by Mr. Savage, and

Resolved—That the question of legislation, with respect to the practice of Pharmacy in Ireland, be referred back to the Parliamentary Committee, with authority to take such steps as they think proper to give effect to the expressed views of the Council.

The report and proceedings of the Parliamentary Committee were read and approved, and on their recommendation, and after due consideration, it was

Resolved—That the Registrar be instructed, and is hereby authorized to erase the following names from the register of Chemists and Druggists:—

Broscomb, James, 47, Mill Street, Leeds.
Campbell, Oliver, 44, Anne Street, Osborne Street, Hull.
Grimshaw, C. H., 29, Bridgman St., Bolton.
Grimshaw, Joseph, 29, Bridgman St., Bolton.
Harwood, Alice, 9, Chorley Road, Bolton.
Heartwell, Aaron, 20, Every St., Manchester.
Jones, Thomas, Tyallidiard, Llandegla.
Scholefield, Serena, 20, Every Street, Manchester.
Tayler, George, 117, Porter Street, Hull.
Tremearne, A. K. N., 14, North Pier, London Docks.
Williams, Henry Augustus, Chepstow.
Woodburn, John, 46, Todd Street, Bolton.

PROPOSED REGULATIONS AS TO KEEPING AND DISPENSING OF POISONS.

Memorials against their adoption were received from—Aberdeen, Ashton-under-Lyne, Birmingham, Congleton, Leeds, Manchester.

A memorial against the abolition of the Patent Medicine Stamp and Licence was received from Canterbury.

REPORTS OF BOARDS OF EXAMINERS.

March, 1870.

ENGLAND AND WALES.

March	16,	Major Examination,	5	candidates examined,	2	passed.
„	„	Minor, „	22	„	„ 11	„
„	25,	Modified „	80	„	„ 20	„
„	„	Preliminary „	198	„	„ 103	„
		Total .	250		186	

Preliminary Examination, 23 certificates were received and approved.

Resolved—That the following, being duly registered as Pharmaceutical Chemists, be and are hereby granted a Diploma, stamped with the seal of the Society:—

Damill, Charles, London.
Forster, Henry, Durham.

Resolved—That the following Chemists be elected Members:—

Bird, Robert, Reading.
Brown, Edward, Warwick.
Darnill, Charles, London.
Havill, Paul William, Tiverton.
Hill, Henry, London.
Nicholson, Henry, Birkenhead.
Rowell, Robert Henry, Houghton le Spring.

Resolved—That the following Associates of the Society before July 1st, 1842, be elected Members of the Society:—

Mackereth, Henry Whitaker, Ulverston.
M'Culloch, Frederick, London.

Resolved—That the following registered Chemists and Druggists be elected Members of the Society:—

Allgood, Edmund John, Seven Sisters' Road, Holloway, N.
Barber, Edward, Sheffield.
Bridge, Chas. H., 270, Regent St., London.
Eade, George, 72, Goswell Road, London.
Gawith, Thomas Harrison, Liverpool.
Greenall, Alfred, Liverpool.
Greenwood, Charles, Harrogate.
Handcock, John, Leeds.
Hodsoll, Thomas William Henry, 17, Cross Street, Ashley Crescent, London.
Holland, Walter, Messingham.
Jones, George William, Worksop.
Jones, John Hugh, 9, Finsbury Place, Finsbury Square, London.
Jones, William O., 34, Cambridge Terrace, Cornwall Road, Notting Hill, London.
M'Kinnell, William, Northampton.
Morton, Thomas, Kirkintilloch.
Muir, John Fleming, Dunoon.
Nicholson, Alfred, Tunbridge Wells.
Owen, John, 234, Upper Street, Islington, London.
Pearse, John, Taunton.
Radnall, William Henry, Ulverstone.
Ridley, Horace, Princes Risborough.
Shipman, John Joshua, Northampton.
Wright, Joseph, Yarmouth.
Wright, Joseph, 2, Oxendon Street, London.

Resolved—That the following, having passed their respective Examinations, be elected Associates in business:—

Caunt, William Frederick, Buckley.
Inkley, Jesse, Holbeach.
Pollard, John Frederic, Liverpool.

Resolved—That the following, having passed their respective Examinations, be elected Associates of the Society:—

Aylesbury, William Thomas, Brighton.
Bathe, Robert Samuel, St. Alban's.
Bingley, Frederick B., London.
Birse, William, London.
Blackmore, John Joseph, Exeter.
Blunt, Walter Buswell, Leicester.
Boutell, Harold, Sudbury.
Brett, William Robert.
Crawshaw, James Henry, Sheffield.
Evans, Joseph James, Bridgnorth.
Godfrey, Henry Edwin, London.
Goodliffe, George, Hammersmith.
Hannah, John, Liverpool.
Hardy, George, Malton.
Hartt, Charles Henry, Torquay.
Huntley, Henry Edwin, London.
Lloyd, Edward, Abergele.
Normand, Claude, Hammersmith.
Pointon, George, Birmingham.
Richmond, Richard, jun., Leighton Buzzard.
Roberts, Theophilus J., Holyhead.
Rome, George William, Langholm.
Watkinson, William Joseph, Preston.
Weaver, Theophilus, Birmingham.
West, Arthur Henry, London.
Whaley, Edward, Kingston-on-Thames.
Young, Joseph, Leicester.

Resolved—That the Secretary be requested to issue a circular forthwith to the local Secretaries and Members who have not paid their subscriptions for the current year, calling their attention to clause 10, section 1, of the Bye-Laws.

EXAMINATION IN LONDON.

April 20th, 1870.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Hanbury, Haselden, Ince, and Southall.

Dr. Greenhow was also present on behalf of the Privy Council.

Twenty-nine candidates presented themselves for examination,—six Major and twenty-three Minor; the following passed:—

MAJOR (registered as Pharmaceutical Chemists).

*Porter, John Thomas, Long Sutton.
*Cadman, Daniel Charles, London.
Walker, John Wesley, Maidenhead.
Swift, William Philip, Spalding.
Thomas, James John, Croydon.

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* Passed with honours.

MINOR (registered as Chemists and Druggists).

*Hearn, John, Liverpool.
*Romano, Frederick William, Rio Grande do Sul.
*Chifney, Newton, Longsight.
*Strickland, George Hodgson, Darlington.
Thresh, John Clough, Pontefract.
Williams, David Tobias, Cheltenham.
Freestone, Robert Henry, Bristol.
Churchill, Henry, Reading.
Bell, James, Manchester.
Taylor, James, London.
Samuel, Albert Henry, Liverpool.
Florance, John Draper, London.
Jones, Henry Williams, Birmingham.
Taylor, John William, Great Grimsby.

The above names are arranged in order of merit.

FIRST, OR PRELIMINARY EXAMINATION.

The following, having presented to the Board certificates of examination by legally constituted Examining Bodies, and the said certificates having been approved, were registered as

APPRENTICES OR STUDENTS.

Brown, Robinson, Stockton.
Duggan, Frank H., Reading.
Dunnill, George Henry, Sheffield.
Fordham, John Smith, Wath-upon-Dearne.
Luke, Thomas, Penryn.
Morrison, William, Belfast.
Rowe, William, Devonport.
Smith, William, Norwich.
Vernon, William Henry, Boston.

Certificates of examination of the undermentioned were, in accordance with the regulation of Council, dated February 2, 1870, received and approved.

Maynard, Henry Robert, Brandon.
Perks, Edward Cloudesly, Hitchin.
Wheeler, Frederick William, Bedford.

EXAMINATION IN EDINBURGH.

April 14th, 1870.

Present—Messrs. Aitken, Ainslie, Brown, Kemp, Mackay, and Young.
Professor Christison was also present on behalf of the Privy Council.

MINOR EXAMINATION.

The following passed this examination, and were registered as

CHEMISTS AND DRUGGISTS.

Ewing, James Laidlaw, Dumfries.
*Scott, Walter, Elgin.

MODIFIED EXAMINATION.

Six Candidates presented themselves for examination; the following five passed, and were registered as

CHEMISTS AND DRUGGISTS.

Bethune, John, Belfast.
Macewan, William Morrison, London.
Macleod, Thomas, Glasgow.
Wilkinson, Thomas Turnbull, Newcastle.
Wilson, Alexander, Southampton.

FIRST OR PRELIMINARY EXAMINATION.

Seventeen candidates were examined; the following thirteen passed, and were registered as

APPRENTICES OR STUDENTS.

Bayne, Charles, Edinburgh.
Burgess, Edward, Glasgow.
Coldwell, Peter, Edinburgh.
Fenton, John, Edinburgh.
Gordon, John, Aberdeen.
Jack, David, Edinburgh.
M'Naught, Archibald, Greenock.
Macpherson, Richard, Greenock.
Marshall, James Gibson, Edinburgh.
Paxton, John, Edinburgh.
Watt, John Douglas, Edinburgh.
Williamson, Joseph Russell, Edinburgh.
Wylie, David Neil.

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* Passed with honours.

PHARMACEUTICAL MEETING.

Wednesday, April 6th, 1870.

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

The Minutes of the previous Meeting having been read, the following

DONATIONS TO THE LIBRARY AND MUSEUM

were announced, and the thanks of the Meeting given to the respective donors thereof:—

Durham University Calendar: from the University.—Sturgeon's Annals of Electricity, Magnetism, and Chemistry, 10 vols.; Sturgeon's Annals of Philosophical Discovery, 1 vol.: from Mr. A. Bottle.—A Pamphlet containing the following papers—E. R. Squibb's Report on the United States Pharmacopœia; Note on Rhubarb; Liquor Opii Compositus; F. C. Mussgiller's Note on Collodion: from Mr. Daniel Hanbury.—Map of the Geographical Distribution of the Medicinal Substances contained in the British Pharmacopœia of 1867: from Dr. Clapton.—The Cultivation of the Chinchonas or Peruvian Bark Trees in Java, by K. W. Van Gorkom (with Notes by C. Hasskarl): from Mr. Collins, Curator of the Museums.—Specimens of the Sulpho-Carbolates of Copper, Iron, Zinc, Potassium, Magnesium, Sodium, and Ammonium: from Mr. Balmer.

The **Chairman** mentioned that there were on the table two specimens of hydrate of bromal. They were both sent by Mr. Williams, who would perhaps favour the meeting with some observations upon them.

Mr. **Williams** said he was hardly prepared to go into detail respecting the nature or manufacture of this compound. It was at present rather difficult to prepare, and he was waiting for the arrival of bright weather, when he hoped to be able to obtain it with greater ease, and to have something to say upon its properties. He thought it would be found to be more powerful than chloral, and expected that three or four grains of it would be as powerful as thirty or forty grains of chloral; but at present that was a matter of theory.

Mr. **Poths**, of the firm of Poths and Haas, of Houndsditch, exhibited some pharmaceutical balances, and explained their particular uses; one, that attracted most attention, was for the determination of specific gravities. They were of German manufacture.

The **Chairman** remarked that, as far as appearances went, they had much to recommend them, but whether they were expensive or not, he could not say.

Mr. **Poths** said they were not expensive, and they would be found very convenient for use.

Dr. **Redwood** said the balance for taking specific gravities presented some advantages over those commonly used in this country. The specific gravities could be taken rapidly and with accuracy, and he believed the apparatus was supplied at a moderate price; so far as he could judge, it would be found to answer well for pharmaceutical purposes.

Mr. **Hanbury** stated that a similar balance to that exhibited for taking specific gravities was described a good many years ago by M. Mohr; and he recollected seeing it in his shop at Coblentz on one occasion. It was then pointed out to him, that by means of it, the specific gravity of spirit or acid could be taken in the shop bottle, without the necessity of removing it, and that no particular weights were required beyond those belonging to the apparatus. Those were the chief advantages the balance appeared to offer. On the other hand, it was not at all adapted apparently to thick liquids and syrups, for which the old-fashioned bottle must still be resorted to.

PRESCRIPTIONS FOR EXAMINATION. STATEMENT OF THE SOCIETY'S COLLECTION.

BY JOSEPH INCE.

I have the permission of the Board of Examiners to bring this subject before your notice. In order to save time let me begin at the end. Not very long ago I had to work up some geographical details for a friend's paper. I went down in consequence to Whitehall and on entering the Rooms of the Royal Geographical Society asked to see a map of the locality desired. The answer was, *which?* In a few minutes a long line of canvas was displayed and books were likewise provided in the Library. There was sufficient material for two hours reference. This was at the date of the Abyssinian Expedition and there might have been an exceptional attendance for there was a constant ebb and flow of visitors. Four questions out of six turned upon the fortunes of King Theodore. But in addition, one wished to emigrate to Australia and wanted maps and charts: another had an Indian Government appointment; a third was bent on a botanical excursion. Finally, during those two hours none went away unsatisfied. On leaving, it appeared to me that that was exactly what a Society should be able to accomplish; it should be the representative and exponent of the particular branch of Science it was established to promote. Ours being the Pharmaceutical Society should yield the palm to none in advancing Pharmacy.

To-night I have to talk about Prescriptions, the threshold of our practical knowledge. I wish to state our present means of reference, what they were, and are, and what with your favour they may become.

Let me put the matter under an entirely new aspect, and introduce you to a thought the truth of which it will be my chief aim to prove.

Two duties are before us, the first is to examine, the second is to teach. I do not come to you as a critic, nor to find ingenious fault with the labours of the past—I only say that our books have been arranged solely for Examination purposes—that they have become insufficient for the task imposed, and that neither in variety, extension or construction, can they teach the student. To what examiner has it not been suggested by a candidate, that he cannot be expected to be familiar with that which he has never seen? The time has come when this excuse should cease, and just as a man frequents our Museum to learn Materia Medica, so also he should consult our own Collection in order to read Prescriptions. There he should find all that he may require—specimens of every possible handwriting whether written by the schoolmaster or the sphinx—varied constructions easy and difficult alike—the English recipe, the German scrawl and the French ordonnance. This already I have to some extent attempted and it will explain the presence of many formulæ which would not otherwise have been admitted. There seems no valid reason why not only the characteristic practice of the Medical Profession, but that of special localities should be represented. If when at Rome we must do as Rome does, let us know what that may be. London has not the monopoly of Medicine—the great manufacturing towns should not be excluded, nor should the country fail to contribute to our store of knowledge.

Can books teach? Would not a young Pharmacist acquire more if placed three months in a brisk dispensing establishment than in twice the time spent in poring over manuscript? Who doubts the fact? We work for the average and wrest the largest amount of good from circumstances.

Let us infuse common sense into our undertakings, and in reference to this particular matter teach what we can in the best manner. Not twelve candidates could at any given juncture enter the ranks of what are called historic houses: neither books nor museums substitute the office of the teacher—they are aids,—let them as far as possible be efficient. But in the case of those to whom exceptional facilities have been denied do not inflict the grievous wrong of forbidding the help at our command and of thus offering another illustration of wisdom at one entrance *quite* shut out.

We have amongst us a class of excellent private instructors. I cordially believe in this system of education and recognise its importance. These gentlemen teach, in order to gain a living, and the labourer is worthy of his hire. I feel sure however that to none is the addition of any public source of education more a matter of rejoicing, for their personal reward is the success of those whom they have endeavoured to instruct. There may be those, and such will exist as long as the world stands, to whom pecuniary advantage is the one consideration and to whom therefore the success or failure of the taught is of secondary importance.

What honest private tutor would not prefer to have his endeavours seconded, supplemented and rendered infinitely more useful by known standards of reference?

I must at once enter on the statement of the Society's collection of prescriptions.

There are five books and one extra is in course of completion.

I. Contains about 70 prescriptions—there is room for 47.

II. A very nice collection, contains 50 prescriptions: there is room for 33.

III. A larger book—contains about 150; 98 additional formulæ are required.

IV. Contains over 70 prescriptions: 120 are needed.

V. Contains 61 prescriptions: there are about 300 wanted. This dirty, ill arranged assortment, is the special volume of the Society, not likely to extend its influence nor to inspire reverence in the student's mind. Over its pages hovers the halo of antiquity: it suggests the memories of Pharmacists, long since dead and buried, and exhibits abundant traces of what chemists term organic matter, but to express which common people use a shorter name. Various theories have been entertained with regard to its construction. The popular impression is that it was compiled by the great-grandfather of our excellent secretary when he was a very little boy—but Mr. Orridge, up aloft one of his usual steeples has thrown light upon the subject. He regards it valuable as an illustration of scripture, for it was the Pharmacopœia used in the Ark, and kindly lent by Noah.

Addenda.

I would direct attention to the Portfolio of the late Jacob Bell. The shape is perfect and the tinting of the paper (buff-demy) seems desirable. White paper soon becomes soiled—blue paper, fades in colour. Also, though in a portfolio the leaves are guarded, which saves great after toil and trouble. This wants 92 characteristic Prescriptions, inserted; (that is pasted,) and 50 loose. I propose with the permission of the Members of the Society to fill this book solely with noted specimens of the Prescribing art.

My own selection, unfinished and not included in the list, wants 200 formulæ.

We have therefore 406 Prescriptions from which two months ago, about 200 might have been deducted. To complete the existing Collection of the Society, 940 recipes are required. Copies are useless. I shall not be charged with exaggeration when I say, that 400 recipes *cannot* represent Pharmacy, nor equal the demands of our Examinations.

Finish these books first, and then add as a Library of Reference 5000 more and we shall have the beginning of a fair collection.

It is now my duty to tell you about something done and why this project was entertained. I began the idea, but speedily it was taken out of my hands. It is mine no longer. The first notion (seeing the insufficient character of our books for present use) was to contribute 100 recipes. These were so easily obtained that the number was doubled. Wishing to complete the scheme, though only 23 were required, I called on three London pharmacists. One, a Member of Council, who is never weary of well doing, gave me my French prescriptions. Another, an old school and College friend, gave West End Prescriptions, and specially those he knew I was not likely to obtain. A third for whom I have an hereditary respect, which has deepened into a warmer feeling, allowed me to represent Belgravia. That night, 172 recipes were on my writing table. One, whose name I will not mention, but who has six times been President of this Society, fitted me up with his particular circle of dispensing. A friend whom I hold in honour, being the London representative of a wholesale house kindly supplied one or two prescriptions from different establishments. The advantage of this plan I cannot over-estimate.

The country has sent representative formulæ from Clifton, Islington, Leamington, Nottingham, and Weymouth. Lastly, a person well known in Oxford Street has made my book of value and historic by giving the collection of Jacob Bell. Still though there is a silver lining, there remains a large expanse of cloud, and deficiencies in painful number crowd upon observation. Celebrated practitioners are poorly represented, such as Chambers, Bright, Sir Hy. Holland, or Sir Benj. Brodie. Students should recognize these handwritings at a glance. Even Mr. Deane (himself an Examiner) appends a note, "Lawrence I believe," to which I have added "Sir Wm. Lawrence I am sure." Returning to the theory that these books should teach, it would be most desirable to have a fair proportion of Golding Bird whose handwriting was about as obscure as his recipes were difficult to dispense. To decipher and prepare these prescriptions would test dispensing skill. Equally useful for purposes of instruction would be Elliotson with his unusual but successful doses, who for bad caligraphy might contest the prize with Soest. A dozen formulæ of this latter gentleman would prove of service in the Major Examination. Elliotson is absent from the collection altogether, and neither the specimens of Golding Bird nor Brodie are characteristic.

Perfect examples of Sir Benjamin are difficult to obtain. Being a celebrated man, member of many learned Societies, President of the Royal, and remarkably well known abroad, his autograph was in keen request. Moreover he relied more on pure Surgery and treatment than on physic, and he was not a prescriber in the ordinary sense of that word. Still his few distinctive formulæ, the Compound Rhubarb Pills, Manna and Senna Draught, and Pareira Brava, should find a place in our collection. Duplicates of these might be draughted into different books. Let a careful student compare the seemingly infinitesimal doses of a French ordonnance, with the potent quantities ordered by some of our most distinguished practitioners—let him observe the startling differences existing even in France between the exhibition of some opiates, in homœopathic fashion, and syrups administered with liberal hand: contrast this with the special practice of men like Elliotson, Miller (of India), Seymour, Dickson and others, and he will hesitate in forming an opinion at hap-hazard on what is called Posology. The dose of Morphia and of all preparations of Opium; Quinine, Scheele's Hydrocyanic Acid, Iron, and many remedies must be interpreted by the known usual practice of the prescriber. Here our Society may teach in a most effective manner and indeed may present a wider range than the generality of even London Pharmacies. But I am reminded that once I was the companion of a Yorkshire farmer in a tour through the North of France. He was anxious to learn the difference between the two countries. We came on a farm where there was a remarkably diminutive haycock, which had to be investigated. "Why do you make your stacks so small?" was the question. "We should have made it larger" was the answer "if we had had more hay." I leave you to draw the moral. We want a liberal contribution of material. All has prospered this past Council year which is hastening to expire. The examinations are besieged—the Secretariat is more than doubled and we must keep pace with the exigences of the times in providing within these walls for the demands of the Examiner and the instruction of the candidate.

I ask you to-night to complete the scheme—will you kindly talk about it to your friends—unaided I am powerless, but with your support success is certain. I offer an inexpensive good—nothing visionary but that which by the soberest calculations may be obtained. I do not appeal to you from motives of listlessness or indolence; I am not empty-handed for I show work done—and recollecting the extreme personal indulgence that has smiled on every public undertaking I have yet attempted, I may translate the experience of the past into a promise for the future; and when I solicit your assistance in the establishment of a collection of autograph formulæ which shall stand without a rival, I know that the members of a great Society will not let me plead in vain.

The CHAIRMAN said the subject which Mr. Ince had brought before them was one of very great importance, and the way in which he had brought it before them must have been a source of gratification to them all, accompanied as it had been by a most handsome and liberal contribution to the Society's collection of prescriptions. That these autograph prescriptions were of vast importance to students, and also to the examiners in their labours in examining, there could not be a doubt; and any addition of representative formulæ was of the greatest possible importance. Young men who came up for examination, and saw prescriptions written by a London physician, sometimes said that they had never seen any written in that way before, and that in the town they came from they were written in a different way.

Mr. HASELDEN said that if they placed a large number of prescriptions before the students which they had never had an opportunity of seeing before, whether it be a collection of to-day or twenty years ago, there would always be the same difficulty as regarded the handwriting. If the Society could collect a large number of books, with prescriptions of a similar character and writing, but not copies the one of the other, and allow the candidates one set to study, retaining the other set for the examiners, young men could then come into the examiners' room with a little more confidence; but, unless the Society could do that, he did not think they would assist the candidates much, and it would be no better to have ten or twelve books than three or four. If the candidates had an opportunity of seeing the large number of prescriptions, there would be no great difficulty; but, not having that opportunity (neither would it be desirable that they should have the examiners' books), when they came to Bloomsbury Square they were at the same disadvantage when they saw a number of books as when they saw only one or two. He thought the London members might in some way assist these young men. He did not mean to say that he would himself write them out, or show them such prescriptions as he had used for the examination, but he was quite prepared to show any student, at a convenient time, any prescription, out-of-the-way or not out-of-the-way, which he might have upon his premises. Formerly, he had a very large collection of prescriptions from all classes of writers, but he was sorry to say that some three or four years ago, when some alterations were made in his premises, they were turned out, and put into the fire. There was one kind of prescription which it was very difficult to obtain. At the examinations candidates were required to point out and discover unusual doses. Now, it was very difficult to obtain autograph prescriptions with unusual doses in them, because, whenever by accident a physician had written a prescription giving a larger dose than appeared orthodox, the prescription would be referred to him for alteration or confirmation, and consequently they could not get these prescriptions to show. On one occasion he wrote out a number of prescriptions,—not in his own handwriting, but in imitation of that of others,—and these contained unusual doses; but it was objected that they were not written by a qualified medical man, although he thought they would have been quite as useful as if they had been. When a candidate saw an examiner write a prescription on purpose to show him, he naturally supposed it contained unusual doses; but if they had a book containing prescriptions with usual and unusual doses, that portion of the examination would be on a fair footing with the other. It seemed to him possible that something might be done in this direction.

Mr. Ince said the great object of his paper was to point out, as far as possible, the importance of having a collection or library of prescriptions for the purpose of teaching as well as examining. He did not see any reason why their examination books should not be open to everybody. They opened the museum, and all the drawers in connection with materia medica, and the students could examine those. Within the last two years they had added some excellent specimens to their collection of materia medica, and he believed one of the best things done of late in connection with their museum, was to put the specimens of materia medica in such a shape and form that they could be examined and studied, because the mere reading of a book on materia medica would not teach much. What he wanted was, that this Society should be the great emporium of teaching those who found a difficulty in being taught. All other learned societies illustrated in a perfect manner the sciences which they taught, and he thought this Society should do the same, and not shut up their prescription-books, and make them simple vehicles for examining. This method of procedure was quite unworthy of them; and he was quite sure that if they took anything like a moderate interest in the matter they would soon have a representative collection of prescriptions, He could himself, without any aid, get something like fifty per week; and if the members would only lend their help, he felt sure that before December next they would have a representative library of prescriptions, so that when students came to read up for their examinations, they might not only learn materia medica, botany, and chemistry, but also the handwriting of the prescriber.

Mr. Hills asked Mr. Ince how he would be able to get fifty prescriptions a week unaided.

Mr. Ince replied that he hoped to do it by writing and asking friends for them. His object in appearing before the Society was to invoke their assistance.

Mr. Hills said that, speaking as a dispensing chemist, and having a few prescriptions to dispense every day, he should like to know how Mr. Ince would secure original prescription, because generally people took their prescriptions away with them.

Mr. Ince said he should get them by writing to anybody likely to have them, and sometimes the largest number came from the most unlikely sources. He thought he could decidedly raise fifty a week by this means.

Mr. Hills remarked that his object in asking the question was to find out what Mr. Ince wished to accomplish, and by what means. It was a difficult thing to obtain original prescriptions, unless they got a medical man to write them, and he did not think there would be much difficulty about that. As regarded Mr. Ince's paper, he thought it a very capital one, and especially as to the collection which he advocated. The old prescription-books, on which Mr. Ince had been rather hard, had done much service in the examinations, and perhaps there was not a more keen examiner than Mr. Ince, who had taken so deep an interest in this subject. He should be very happy to assist him to the best of his ability in forming the library of prescriptions which was considered so desirable.

Mr. **Martindale** thought that Mr. Ince's paper was interesting from an historical point of view, as the prescriptions would show the light of ancient pharmacy. There were other prescriptions of the present day which exhibited a peculiar handwriting,—that of Dr. Williams, for instance, being very peculiar and characteristic. He thought the old way of putting so many different articles into one formula had seen its day; in modern prescriptions there were much fewer ingredients than formerly. The practice of examining in prescriptions of fifty or a hundred years old was scarcely admissible in the present day, and he strongly advised examining in those of more modern times, which were in every-day use.

Dr. **Attfield** mentioned that a short time ago, when he wanted to illustrate the subject of metric weights and measures, he wrote to a few pharmaceutists, asking them to get him some French prescriptions, and he obtained a score with great ease.

The **Chairman** hoped a complete and representative collection of prescriptions might be obtained for that Society, but whether for the use of students solely or for the use of examiners solely was quite another matter. That there should be a representative prescription library for reference under certain circumstances was manifest, and he hoped the hint thrown out by Mr. Ince would be responded to by all who had the opportunity of contributing to the collection which it was desirable to form. If no other gentleman had any observation to make upon this subject he would call upon Dr. Redwood, who had something to communicate upon the syrup of hemidesmus.

Dr. **Redwood** said he had no remarks of his own to make beyond simply explaining the fact that this subject was alluded to at the last meeting by Mr. Porter, who particularly mentioned that he thought an improvement might be made in the process of the Pharmacopœia for making this syrup by applying less heat than was there indicated. Mr. Gale had brought two samples of the syrup made by different methods, one being made exactly according to the Pharmacopœia, and the other by a different process, and probably Mr. Gale would be kind enough to explain the exact circumstances under which these two syrups had been prepared, and then perhaps Mr. Porter would be prepared to offer some remarks with reference to the subject; but first it would be as well that they should clearly understand what the two samples before them were.

Mr. **Gale** said that, after the reference made last month to the syrup of hemidesmus, Dr. Redwood asked him if he would send him samples of syrup made by the two processes, he had therefore prepared one exactly in accordance with the British Pharmacopœia, and one according to the form introduced in the 'Pharmaceutical Journal' some years ago by Mr. Jacob Bell, but this form was six times the strength of that given in the British Pharmacopœia, and therefore they could not compare them without diluting the latter.

Mr. **Porter** thought, if it were deemed advisable to have this preparation retained in the next Pharmacopœia, the better way of making it would be that given by Mr. Bell in one of the early volumes of the 'Pharmaceutical Journal.' As thus made, it was six times the strength of that of the British Pharmacopœia, but, of course, it could be reduced to the latter strength if thought desirable. In Mr. Bell's process the hemidesmus was exhausted by percolation with cold water, instead of being infused with boiling water.

Mr. **Hanbury** said that hemidesmus seemed to be a very unimportant drug, and, unfortunately, that which they got was often of a very inferior quality. Some years ago he caused some to be collected in Ceylon, and he also got some from Madras, which was much more aromatic and more sound than any he could buy at the druggist's. It was frequently very much damaged, and was sent over just as merchants might find it in the bazaars,—in an indifferent state, and wanting in the qualities which the drug ought to possess.

The **Chairman** remarked that no doubt it found its way to the English market in a very dirty and unsatisfactory state, and the price at which it was sold was not such as to encourage merchants abroad to take much care of it.

Mr. **Gale** then drew attention to a specimen of syrup of hydrate of chloral. The strength of it was 10 grains in a drachm. It was made with syrup of orange-peel.

Mr. **Hills** said the great object in such a preparation, which might come into general use, was to have uniformity; but, at present, a customer might go to three or four different shops, and find the syrup different in flavour in each one. They might each have the same quantity of hydrate of chloral, and yet be very different in flavour. It was very desirable in such a thing, that they should have something definite agreed upon amongst themselves. It had sometimes been flavoured with almond, but he rather preferred the orange peel, and he thought that ten grains of the hydrate of chloral to one fluid drachm was a suitable strength.

Mr. **Haselden** said that he had had no experience in this particular preparation, but he had had great experience in many other preparations brought out as tinctures and syrups, and he objected to this mode of prescribing *in toto*. He was opposed to the system of ordering an ounce or two of a syrup or tincture, and telling the patient to take a teaspoonful or so many drops. This did neither the patient, the pharmaceutist, nor the physician much good; and he would rather all these preparations were swept away altogether, and let the physician prescribe the hydrate of chloral in the dose he thought necessary, and in the vehicle he would like his patient to take it in. If the prescriber was not acquainted with a good vehicle, any chemist in his neighbourhood would only be too happy to give the information. There would be a variety of tastes, and they would have fifty differently flavoured syrups, each being described as the best, and a preparation of this class would vary at different establishments. He was particularly desirous that prescribers should order liquid medicines either in draughts or mixtures, trusting to their own skill in prescribing for the production of an elegant compound.

Mr. **Hills** asked Mr. Haselden what he would do in the case of paregoric and the syrup of poppies. Would he object to sell a pint of Fluid Extract of Sarsaparilla, unless by prescription? They were talking of that which ought to be in the Pharmacopœia at the present moment, the hydrate of chloral. To decline selling paregoric, sarsaparilla, and medicines of everyday use, without a prescription, or an order from a medical man, would be to cut off half their business.

Mr. **Carteighe** remarked that he had made this syrup several times, and had used almond and tolu for flavouring it, and as no objection had been made to that syrup, he thought they might adhere to that method of preparing it.

Mr. **Umney** said he had made the syrup, and had flavoured it with orange-flower water. Syrup so prepared had been sent in considerable quantities to different parts of the country.

Mr. **Morson** said they must bear in mind that hydrate of chloral was a new remedy, and as yet they hardly knew to what perfection the manufacture of it would attain. There was now a considerable difference in different specimens and in all probability in a short time they would have it in a more uniform state than that in which it was supplied at present. He thought, therefore, that they might wait a little while before they fixed upon the forms in which it should be administered, for they hardly knew what would be the results even of its applications. Medical men were employing it in every direction, and without much judgment in some cases; sometimes it acted beneficially, but there were numerous instances within his own knowledge where its action had not been so decided or clear as it should be. It had attained a celebrity in a short space of time, which, compared with the power of manufacturing it, was rather astonishing. He had no doubt they would soon have abundance of it in the market. At present it was chiefly produced in Germany, and sold to the English manufacturers, by whom it had not been made to any great extent. There was a subject of a different kind, upon which he should like to say a few words that evening, and that was with reference to some of the opiums of commerce—the opiums which they were in the habit of using, and the high price of which rendered it important that they should be able to make a judicious selection of them. He had in his hand a specimen of opium which was so low in the proportion of morphia it contained as to make it a very serious matter that it should be supplied for the purposes of pharmacy. It contained only about 3 per cent. of morphia, and yet if it were placed before a druggist he would say, judging from its appearance, that it was capital opium; whereas it would require three times the quantity of it, at the least, to make a tincture which would be of the strength of that contemplated in the Pharmacopœia directions. The price fetched by superior opiums in the market was unusually high, and any gentlemen who knew anything of the wholesale drug trade would know that they were caught up with avidity. He had also with him a specimen of opium which no druggist would buy, for the reason that he probably would not understand it; but it contained 12 per cent. of morphia. It was a Persian opium, and was in point of fact one of the best specimens intrinsically that could be procured. On one occasion he had purchased a chest of this opium; he worked it, and made a considerable profit by the transaction; and speculating upon what he had done, he purchased another chest of ostensibly the same sort of opium, but this time he did not get half the quantity of morphia that he did out of the first; so that it appeared the Persians were not over-honest. Still he should say they might look to the Persians for the production of opiums of a superior kind. This was a subject which should be properly studied by those who had to deal with this important, if not the most important, article in the materia medica; for whatever narcotics they might introduce, it was probable that nothing would supersede that which from time immemorial had been the sheet-anchor of the profession. He was glad to say that a certain quantity of Persian opium had found its way into the market, but it would not meet with a ready sale, because it did not present the external characters likely to attract attention. But it was a beautiful opium, and quite unobjectionable in pharmacy. At present all sorts of prices were asked for it, but he knew from experience that it could be produced at a reasonable rate, and he thought it would tend to check the purely commercial speculations now going on. He should be prepared probably to say something more about it at a future meeting, when he had completed the working of a large quantity of it which he had in hand. But there was no doubt at all in his mind that they had in this opium, if it were loyally and properly prepared, an article which was superior to any of the Turkey or Egyptian opiums. He remembered examining Egyptian opiums some twenty or thirty years ago, and they were then very good, but they got worse and worse until they became almost useless. At the last Paris Exhibition he spoke to the gentleman who had charge of the Egyptian collection, and he then ascertained that they could not get the price of the opium such as they sold some years ago, and that now, to meet the price, there was one part of original opium mixed with three parts of something else.

Mr. **Williams** stated that Persian opium used to be introduced in the form of sticks. He examined a few pounds some time ago, and found it contained 12 per cent. of morphia. It was a beautiful opium, but still quite unsaleable for ordinary purposes. Reverting to the subject of hydrate of chloral, he remarked that, notwithstanding what the Vice-President had said against the syrup, there was no doubt it would come into general use, and become an article of commerce. It might be important to know how to test it, and see whether it contained 10 grains to a drachm or not. He had made syrup with glycerine and with sugar, and he preferred the glycerine to the sugar. If a small quantity, say half an ounce, of syrup be diluted with water, and mixed with a small quantity of ammonia, shaken up, warmed in a flask, then poured into a graduated tube, and allowed to stand, chloroform would be produced, which would separate in a distinct stratum, and they could read off the amount of this which the syrup yielded.

The following communications were read, but the lateness of the hour allowed of no opportunity for discussing them.

EMPLASTRUM BELLADONNÆ.

BY T. W. GISSING.

A few months since some questions appeared from me in the 'Pharmaceutical Journal' respecting the preparation of emp. belladonnæ. I preferred putting those questions to giving my own experience, hoping that some of my brother pharmaceutists would give theirs. In this I have been disappointed. My attention has been again called to the subject by the remarks of Prof. Redwood at the last pharmaceutical meeting.

I think any one who reads the formula for emp. belladonnæ in the British Pharmacopœia must at once see that the product must always be varying and uncertain. I will not digress to discuss the general question of aqueous extracts, but it certainly wants thorough investigation. Suffice it that the Pharmacopœia orders three ounces of aqueous extract of belladonna to be treated with six ounces of rectified spirit, and the resulting *alcoholic* extract to be mixed with three ounces of resin plaster.

My experience of this is, that almost all samples of aqueous extract differ in the amount of alcoholic extract they yield; consequently, the plaister can never be of the same strength. Again, a fresh-made aqueous extract will yield more to alcohol than one that has been made twelve months. It would have been far better if the compilers of the Pharmacopœia had ordered a given quantity of *alcoholic* extract to each pound of plaister, we should then have had something like uniformity of strength. As it is, I question whether any of the wholesale houses strictly follow the Pharmacopœia formula in making their plaister; or if they do, the varying yield from the aqueous extract may be the cause of their various prices for what is professedly the same preparation.

The complaints about the present plaister running from under the edge of the leather arise, I think, from an injudicious spreading (too much plaister being put on), and from an insufficient margin. Careful selection of a *stout, soft* leather will, I think, remove the objection of the plaister penetrating through it. Certainly in all ways (except strength) the present plaister, in use, is an improvement upon the old.

Wakefield, April 4th, 1870.

LINUM USITATISSIMUM.

BY GEORGE MEE.

The business of a pharmaceutical chemist comprehends so many forces, and so many diverse aggregations of atoms, that the conductor needs the eyes of Argus and the keen sense of smell and taste bestowed on the so-called lower animals.

In all my speculations I never dreamed it would fall to my lot to have to expose the fiery furnace that oft doth dwell in the emollient (?) poultice. For a long time I have regarded linseed meal as a substance rather too heating to inflamed surfaces common to suffering humanity, and for whitloes especially I have been very chary of permitting linseed poultices to be applied; the inflammation did not subside so kindly as under the cataplasma panis, or familiar bread poultice.

Some years ago, when Prof. Tomlinson brought before the notice of the Society some very interesting experiments as to the mode in which oils comport themselves when placed on the surface of water, Mr. Deane sent a communication in the Socratic form: he put his note in the form of a question, and asked for information (if I remember rightly) as to how linseed oil behaved itself; his curiosity being excited by the very common admixture of other seeds, even in the best samples of linseed.

Linseed meal, P.B., crushed linseed, equal parts of crushed linseed and cake, or ground linseed,—a sample of which I now send,—is used as a poultice, mixed with mustard, as an application to the chest, and alone to *inflamed* surfaces.

A gentleman, a short time ago, consulted me (as people will so long as chemists display their cabalistic signs and showy bottles, and doctors boast of their knowledge of disease and their ignorance of cure) about a little boil he had on the forehead between the eyes; he had used linseed poultice, but that made it worse. I directly advised a small bread poultice, remarking that I had found linseed disagreeably heating in such cases. He said the linseed caused considerable swelling. He followed my advice, and, without consulting me as the affair got better, again applied linseed meal (this time a mixture of the cake and crushed linseed), and on going into the City, was met by a friend who, judging by the puffing of the features, exclaimed, "You have been poisoned." This gentleman was a genius. He masticated some of the meal, and a minute afterwards felt an acrid, burning sensation in the throat and mouth; others tasted it, with the same result. He communicated the fact to me. I at once obtained some crushed linseed from a neighbouring corn-chandler. I still found the same acridity. I instantly thought of Mr. Deane's question; and on examining a sample of linseed I had by me, and of which I send some for inspection, and picking out one or two of the dark round little seeds (which I believe to be charlock seeds), discovered the cause of this, and many other cases in which fingers have been poulticed, and, I expect, the inflammation kept up till one or two joints have been removed by the surgeon to save further mischief. I trust I have long been preceded in this discovery; but as I have obtained many excellent hints at our evening meetings, I think this sufficient excuse for taking up the time of the meeting, and that it will lead to a discussion as to what the British Pharmacopœia should order. The crushed linseed was ordered in the first edition, and revised into the powdered cake in the present. It enters into five poultices ordered in the Pharmacopœia, and linseed itself, as an infusion. The cake, as I found it years ago as a child, I now remember was often rather warmer than was pleasant. Even in the "sweetest cake" I have not been able hitherto to obtain meal, which, on being masticated and the air afterwards drawn into the mouth, does not produce the coldness, though in a less degree than that experienced in the same manner with peppermint.

The CHAIRMAN then announced that, in the ordinary course, this meeting would have been the last of the present session, but the propriety of prolonging the session into May or June had been discussed by the Council, and, as there appeared to be some matter standing over, he would suggest they should try the experiment of meeting on the first Wednesday in May. He wished further to intimate that there would be a little change this year in the day and place of holding the annual *conversazione*. By vote of the Council, ladies as well as gentlemen were to be invited, and, under such circumstances, the accommodation afforded in that house would undoubtedly be insufficient. Consequently, arrangements would be made to hold the *conversazione* in the South Kensington Museum; and, instead of its taking place on the Tuesday before the annual meeting, it would be held on the same day, namely, Wednesday, the 18th of May. As they were about to meet at an establishment not their own, it was absolutely necessary that all members and associates who were entitled to be present, and wished to avail themselves of the privilege, should apply at the Society's house for tickets, as it must be distinctly understood that none but the proper tickets issued by the Society would be available,—address cards not being recognized on this occasion.

The meeting then adjourned to Wednesday, the 4th of May.

PHARMACEUTICAL SOCIETY, EDINBURGH.—ANNUAL MEETING.

The Annual Meeting was held in St. George's Hall, on Thursday evening, 14th April, 1870; Mr. AITKEN, President, in the chair.

The CHAIRMAN gave the following valedictory address:—

Gentlemen,—In bringing another session to a close, I beg to thank you very sincerely for the kindness and the courtesy with which my shortcomings as President of this Society for the past year have been received. I take the present opportunity, in the name of the Council, to acknowledge our obligations to the gentlemen who have so kindly assisted us, and read papers at our scientific meetings. These meetings, I regret to say, have not been so frequent as we could have wished, but they have been both interesting and instructive.

At the first of these meetings we were favoured with a paper by Dr. Stevenson Macadam, "On the various Groups of Alcohols," which he illustrated by a large display of diagrams, etc. At our next meeting we had a paper, well illustrated, "On the Metrical Weights and Measures," from Mr. Wm. Gilmour. At this meeting our Honorary Secretary took occasion to give a statement on the additions proposed to be made to the list of articles at present in Schedule A. of the Pharmacy Act, and to the intended regulations for the safe keeping and dispensing of poisons. At our third meeting we had the pleasure of introducing Mr. H. S. Evans, the President of the Society in London. Afterwards Dr. Gamgee delivered a very lucid lecture "On the Recent Investigations regarding the Action of Chloral," which he very ably illustrated by experiments on some of the living animals. We had also an able paper "On the Animal Substances used in Medicine" by Professor Archer, which was profusely illustrated with a great variety of specimens, including the musk-deer, the civet, etc.

Our library has been enriched by a number of volumes, presented by Mr. Baildon and other gentlemen, and the museum by a considerable donation of specimens from Professor Archer. Our meetings for examinations have been frequent, and the large number of candidates, amounting to upwards of 150, will show that we have not been idle. I do not say they all passed, but the fortunate ones did so with much credit, and some of them in honours.

The museum has now been thoroughly arranged, and newly labelled. A catalogue has also been printed, showing the various specimens belonging to the Society, and we trust many additions will be made to both museum and library by our friends and well-wishers, so as to enable us to make them more popular with our members.

I may mention, before concluding, that books required by members from the library will be given out any day after 10 o'clock A.M., by making application to the Curators at 119, George Street, and we hope that many will avail themselves of this privilege.

The President then read the report of the Council.

ANNUAL REPORT.

The Council have, as usual, to make a few remarks at this, the close of another session. It must be admitted by all that the year of 1869, recently closed, will ever be memorable in the annals of the Pharmaceutical Society as the first year following the one in which the Pharmacy Act was passed, and during which the enactment came into full operation. From the 1st of January of the past year, the practical working of the new Act became imperative, and during these twelve months it cannot be denied that there have been a few cases of apparent hardship. No Act of Parliament can ever be passed without such a result; and while sympathy may be readily extended to some, it must be allowed that many, indeed the majority of the complaints, were made without any sound foundation or just reason. During 1869 the Board of Examiners in Edinburgh have had before them 153 candidates, several of whom were, however, rejected. With one or two exceptions, it is gratifying for the Examiners to report, that when young men have been sent back to their studies and afterwards reappeared before the Board, they expressed themselves grateful that the decision of the Examiners had entailed upon them a certain amount of additional acquirement in pharmaceutical knowledge, which they felt assured would prove useful to them in their future career. From the rule now in operation, and adhered to most rigidly, that all (with the exception of those registered and entitled to undergo the Modified Examination) must undergo the Preliminary Examination, the Council believe much good will ultimately result; as it must be confessed that many young men have hitherto been sadly deficient in fair classical attainments.

The scientific meetings have not been so numerous this session as the Council would have desired; but they hope, from promises already made, to make up for this deficiency next winter. Two or three valuable communications have, however, been made, and to those gentlemen who have so kindly come forward, the Council beg, in the name of the Society, to tender their best thanks.

The Council take this opportunity to refer to the proposed regulations for keeping and dispensing poisons. The whole question falls to be discussed before the general Annual Meeting of the Society, to be held in London next month; but as the subject was very fully discussed at one of the evening meetings here, the Council think it right to express the feeling entertained by a majority of their number, that it is not expedient to make these regulations compulsory on all chemists and druggists. They are aware that many have already adopted some of the very regulations now proposed by the London Council; and while, therefore, they would be well pleased to find a strong recommendation emanating from the head centre of the Society for the general adoption of some of the protective measures already published, they believe it would be more satisfactory to let the adoption of these regulations be permissive, and not compulsory. While expressing this feeling, the Council here will decline to take action in positively opposing the proposition of the London Board; and if it be decided at the May general meeting that such regulations are to come into full operation, they will unite in endeavouring to carry out what they will then look upon as the decision of a majority of the Society, and will do what they can to assist in fairly trying the system now advocated, with a view to its ultimate adoption by all registered chemists and druggists.

The museum has now been remodelled, relabelled, and catalogues of the whole printed. Any one, therefore, wishing to contribute specimens can be furnished with a list of all these articles at present possessed by the Society, and thus avoid sending duplicates, while they may in this manner do much to increase both the interest and the value of the Society's Museum at Edinburgh.

The library receives additional volumes from time to time; but the Council have again to express their regret that greater advantage is not taken of this privilege, as an arrangement has been made by which, at any time, books will be given out by the curators, who will always be found at 119, George Street.

In conclusion, the Council beg to refer to the satisfactory and liberal arrangements which were made at the commencement of last session for admission to the lectures of Dr. Stevenson Macadam on Chemistry and Dr. Angus Macdonald on Materia Medica.

They would further remind pharmaceutists that Professor Balfour has also kindly agreed to grant admittance to his approaching summer course of lectures, in the Royal Botanic Garden, to all students in pharmacy, on the same liberal terms which characterized the agreement entered into with the gentlemen who, during the bygone winter, have so ably taught the two departments of chemistry and materia medica.

The following gentlemen were proposed and carried as office-bearers for 1870–71:—

President.—Mr. Aitken.

Vice-President.—Mr. Buchanan.

Council.—The President and Vice-President; Messrs. Ainslie, D. R. Brown, H. C. Baildon, G. Blanshard, Gardner, Gilmore, Kemp (Portobello), Noble, Raimes, J. R. Young; President and Vice-President in London, *ex officiis;* Kinninmont, Glasgow; and Kerr (Dundee).

Library and Museum Committee.—The President and Vice-President; Messrs. D. R. Brown, H. C. Baildon, and Mackay; Mr. D. R. Brown to be Convener.

Secretary.—Mr. John Mackay.

Curator of Museum.—Mr. Paton.

Messrs. Aitken, Buchanan, Ainslie, Kemp, D. R. Brown, and J. Young, were proposed as Examiners.

Mr. Mackay proposed a vote of thanks to Mr. Aitken for having so ably acted as President for a second time, and also for having agreed to continue to fill the Chair for the next year.

This was seconded by Mr. Baildon, and carried with acclamation.

Mr. Young proposed that cordial thanks be awarded to Mr. John Mackay, who had continued to act with so much energy and satisfaction as Honorary Secretary. This was carried unanimously with loud applause.

The meeting thereafter adjourned.

The Annual Supper took place on the following evening, April 14th. The company numbered upwards of 120. Mr. Aitken, President of the Society, occupied the chair; and the croupiers were Mr. J. Buchanan and Mr. W. Ainslie. Among the gentlemen present were: Professor Archer, Dr. Angus Macdonald, Mr. H. C. Baildon, Mr. Moffat, Glasgow; Mr. Kinninmont, Glasgow; Mr. W. Graham Carr, Berwick; Mr. Seath, Dunfermline, etc.

After supper, Mr. Mackay, Secretary, intimated that he had received letters of apology from Professor Maclagan, Professor Crum Brown, Dr. Stevenson Macadam, Dr. Arthur Gamgee, Professor Balfour, Mr. Richard Raimes, and other gentlemen.

The Chairman then proposed the usual loyal and patriotic toasts, which were warmly received.

Mr. Blanshard replied for the Volunteers.

In proposing the toast of the evening, "Success to the Pharmaceutical Society," the Chairman said that the Society deserved all that could be said of it, but as they were that evening inclined to be a musical party, it would be wrong in him to enter into a long tirade of praise in its favour, especially as they knew as thoroughly as he did the good it had done. They were not only indebted to the Pharmaceutical Society for bringing forward a better educated class of young men, but also for the many opportunities it had given them of meeting, as they now did, as brothers and true friends. The Society was also freeing them from that jealousy which used to be so keen and common among chemists and druggists, and he trusted that in a short time it would be thoroughly banished. He had great pleasure in calling upon the company to drink "Success to the Pharmaceutical Society."

The toast was drunk with all the honours.

Mr. Buchanan, Vice-President, then proposed "The London Council."

Mr. Mackay, in replying to the toast, said he had on many previous occasions declared that the Pharmaceutical Society, as a Society, was exceedingly fortunate in having twenty-one such gentlemen at the head of affairs in London. He did not say so egotistically at all, for though he happened to be the Scotch representative at that Board, distance prevented him taking his full share of work in it; but, notwithstanding, when he did make his appearance, he would frankly say, although the only Scotchman there, the London Council listened very readily to all he had to state on behalf of the claims of the North British branch. He knew, and he believed all present would admit, they would not find perfection in any society, as they would not find perfection in any man, but this he would say with all truth and sincerity, that throughout the world they would not find gentlemen more willing, and, from their high scientific position, more able, to guide the affairs of the Pharmaceutical Society, than those who had occupied, and still continue to occupy, seats at the Council Board. And if any proof was wanted of the truth of what he had said, he might take them back to the commencement of the Society in 1841, and point to the high and proud position which the Pharmaceutical Society occupied at the present day. But anything he could say would be quite uncalled for, knowing as he did that many around the table had watched, and continued to watch, the proceedings of that London Council, and he was sure the more they all knew of the labour, the time, and anxiety spent by these gentlemen on behalf of that Society, the more would the Council be respected.

Mr. **Ainslie** then proposed "The Lecturers and Honorary Members," and Professor **Archer** responded to the toast.

Among the other toasts were,—"Friends from a Distance," proposed by Mr. C. H. **Baildon**, and responded to by Mr. **Kinninmont**; "The Chairman," by Mr. **Kemp**; "The Croupiers," by Mr. **Blanshard**; and "The Secretary," by the **Chairman**.

During the evening several good songs were sung.

PROVINCIAL TRANSACTIONS.

BRADFORD CHEMISTS' ASSOCIATION.

A Quarterly General Meeting of the Members of the above Society took place at their rooms in Salem Street, on the evening of Tuesday, the 12th of April; Mr. **Michael Rogerson** in the chair.

The main subject of discussion was the proposed legislation directing the isolation, in the dispensaries of chemists, of the somewhat heterogeneous class of substances which the law has indiscriminately branded with the spell-word **Poison**!

After several members had given expression to their views in reference to the question, the following resolution, being offered by the **Secretary**, was proposed by Mr. **Hick**, seconded by Mr. F. M. **Rimmington**, and carried unanimously:—

"That, in the opinion of this meeting, legislation respecting the manner in which poisons shall be kept is undesirable;

"That some of the plans suggested would involve dangers as great as those they are intended to avert;

"And that the matter may be safely left to the discrimination and sense of responsibility of those who are authorized to use and deal in such substances."

BRISTOL PHARMACEUTICAL ASSOCIATION.

(*Lecture on "Apothecaries, Druggists, and Pharmacists, past, present, and future." Continued from page* 616.)

BY MR. CHARLES TOWNSEND.

This was pre-eminently the age of quackery, and it is well perhaps that I should say all I think need be said on this subject at this point. In the 'Dunce's Directory' for 1678, a strange and vivid description of, and satire upon, the true quack appears. I wish I could add that the race was extinct, and that the miserable impostor had no followers in our own enlightened days. The Directory says:—

"To support this title there are several things very convenient, of which some are external accoutrements, others internal qualifications.

"Your outward requisites are a decent black suit and (if your credit will go so far in Long Lane) a plush jacket,—not a pin the worse though threadbare as a tailor's cloak, it shows the more reverend antiquity.

"Secondly, like Mercury, you must always carry a caduceus or conjuring japan in your hand, capt with a civet box, with which you must walk with Spanish gravity, as in deep contemplation upon an arbitrament between life and death.

"Thirdly, a convenient lodging, not forgetting a hatch at the door,—a chamber hung with Dutch pictures or looking-glasses, belittered with empty bottles, gallipots, and vials filled with tap-droppings, or fair water coloured with saunders. Any sexton will furnish your window with a *skull, in hope of* your custom, over which hang up the skeleton of a monkey, to proclaim your skill in anatomy.

"Fourthly, let your table be never without some old musty Greek or Arabick author, and the fourth book of Cornelius Agrippa's 'Occult Philosophy' *wide open* to amuse spectators; with half a dozen gilt shillings, as so many guineas received that morning for fees.

"Fifthly, fail not to oblige the neighbouring ale-houses to recommend you to enquirers, and hold correspondence with all the nurses and midwives near you, to applaud your skill at gossippings."

Surely Bob Sawyer or Old Parr could not have surpassed this. But when such physicians as Sir Hans Sloane and Dr. Meade were found selling specifics and nostrums, it is not to wondered at if less educated men eagerly followed their example.

One of the most prominent and successful of this class was William Reade, originally a tailor, a man *unable to read*, and of the lowest origin. Reade was lucky enough to be of some service to Queen Anne, who was afflicted with weak eyes. She forthwith appointed him her oculist, knighted him, and he rapidly obtained a large and lucrative practice; and Sir William Reade's splendid equipage and superb horses dazzled the eyes of the million, and converted them into his disciples.

But all other competitors for empiric fame were distanced, as you will remember, by a *woman*, and it remained for Joanna Stephens to sound the deepest depths of British gullibility. John Bull is a patient and suffering creature, and in these days even he permits ducks and drakes to be made of his guineas in a wonderful manner; and, although he grumbles, as he hands over the coins or writes his cheque, he soon forgets the tax gatherer or the "financier," and, recovering his temper, returns to his ledger, or his cakes and ale.

But never, surely, was John more miserably fleeced than when he handed Joanna Stephens £5000 for the disclosure of her wonderful recipes. After pocketing enormous fees for real or imaginary cures, and numbering amongst her patients dukes, earls, bishops, marquises, and baronets, Joanna *nobly* offered to divulge her secret for the sum named. To accomplish this a public subscription was commenced, and upwards of £1400 was obtained. But Joanna held out firmly for her terms, and the British House of Commons appointed a commission to inquire into the reputed cures, and this commission, deciding in the lady's favour, granted the following astounding certificate, dated March 5th, 1739:—

"We whose names are underwritten, being the major part of the justices appointed by Act of Parliament, entitled, 'An Act for providing a reward to Joanna Stephens, upon proper discovery to be made by her, for the use of the publick, of the medicines used by her,' do certify that Joanna Stephens did with all convenient speed after the passing of this Act make a discovery to our satisfaction, for the use of the publick, of the said medicines, and of her method of preparing the same, and are convinced of the utility, efficacy, and dissolving power thereof."

And this precious document (dating only 131 years ago) is signed by the Archbishop of Canterbury, the Bishops of Oxford and Gloucester, a long string of dukes and lords, and, worse than all, by Sharpe, Hawkins, and Cheselden, three of the leading physicians of the day.

When Joanna had received her £5000, the wonderful receipts turned out to be forms for powders, decoction, and pills; the powder was composed of egg shells and snails, both calcined. The decoction was made by boiling some herbs (principally camomile and parsley) together with a ball consisting of soap, swines cresses burnt to blackness, and honey in water. And the precious pills consisted of snails calcined, wild carrot seeds, ashen keys, hips and haws, all burnt to a blackness, with soap and honey. In the original there appear minute instructions as to the preparation and compounding of these marvellous ingredients, which are, however, much too long to quote.

Imagine, gentlemen, the Right Hon. W. Ewart Gladstone gravely rising from his seat on the front ministerial bench, and in his most earnest and impressive tones proposing a Royal Commission to inquire into the virtues of "Holloway's Ointment and Pills," with a view of securing the secret of their preparation for the public good, and of rewarding the truly distinguished philanthropist who had offered for the trifling sum of a few thousand pounds, to divulge it for the sake of sore and suffering humanity.

When the condition of medical knowledge was such as I have indicated in the metropolis—the fountain of learning and law—it will readily be imagined that in the provinces matters were much worse. And in fact this was the case; there were at this time very few, if any, educated men out of London, who carried on a trade in drugs, *apart from* medical practice; and it is stated that so late as 1750 there were not more than six persons in London who kept what might fairly be called a chemist's shop.

The whole of the country districts, however, were covered by a horde of itinerant quacks, and the cheap Jack of medicine, a popular but infamous impostor, attended every hiring and fair throughout the kingdom, professing to cure ague, consumption, fever, dropsy, gout, palsy, and every other ailment known or unknown; and making up the lack of his knowledge by the abundance of his impudence. Occasionally meeting with a rough reception, and sometimes even assaulted and stoned by a daring and miserable unbeliever, he yet upon the whole was very successful in his attempts to gull the unhappy rustics, and seldom left any market-town without a full purse and a host of admirers.

As a further indication of the character of much of the treatment of diseases, even by educated men, I will give you two or three prescriptions, taken from Bates's 'Dispensatory,' a popular medical text-book, which was much esteemed during the earlier portion of last century.

And first I will give you a remedy for consumption and diseases of the lungs.

Aqua Antiphthissica, a Water against Phthisicks.

℞. The blood of a Calf, newly killed, freed from its Fibres, by heating them together, lbiij; Venice Turpentine, ten ounces; Liquorice not dried, lbj; Raisins stoned, ℥xij; Fat Figs, No. 100; Garden Snails, No. 70; fresh Orrice-rootes, ℥vj; Spanish Tabacco cut, ℥ij; Crums of white-bread, lbj. Mix and distil according to art. Dose ℥ij, with its proper quantity of Oyl swimming thereupon, being all mixt together with a Pectoral Syrup, and taken for fifteen days.

Here is a cure for the headache, which, if it failed, was certainly not for lack of ingredients!

Aqua Cephalica, a Water for the Head.

℞. Male Peony rootes, ℥iv; Rootes of Angelica, Valerian, ana ℥iss; Leaves of Sage, of Rosemary, Betony, Marjoram, Bawm; Flowers of Lavender, Betony, Peony, Marigolds, Sage, Rosemary, Lilly-Convully, of the Tile Tree, ana, M.j; Stachas, ℥iss; Red Roses, Cowlips, ana Mij; Lignum Rhodium, yellow Samders, ana ʒvj; Nutmegs, ℥iss; Galangal, ℥ss; Cardamoms, Cubebs, ana ʒiij; infuse in the best white wine, lbxiv, for ten days, then add of the best Cinnamon, lbj. Digest for two days, and distil according to Art.

It is profitable against intemperature of the Head, Head ach, &c. Dose two spoonfuls.

Let it be drawn up the nostrils, bathed well upon the temples, and places about the ears, dropt into the ears, and held in the mouth; and Lint dipt in it may be applied to the Nape of the Neck. It gives comfort to many, *tho' to others it is used in Vain.*

It would puzzle some of our ablest chemists to make a nice granular effervescing preparation, containing the active principles of the—

Water of Magpies Compound.

℞. Young Magpies, No. vj; White of Peacocks, lbss; Missletoe of the Oak, Male Peony rootes, ana ℥v; Fresh Cowslip flowers, lbj; White and Spanish Wine, ana lbv; infuse and distil, S.A. Dose ℥iv.

Morning and Evening, in *the last days* before the Full and New Moon. It is an eminent *remedy against* the Epilepsy.

But what in the name of common humanity are we to think of this?

Spiritus Sanguinis, Spirit of Man's Blood.

Distil it from the Blood of a *sound* Young Man, putrefied in Sand, and then rectifie it, SA. It is chiefly commended against Epilepsie, or Falling sickness, radically taking it away; as also against the Palsie, Apoplexy, Ulcers of the lungs, &c. Dose gut 10 ad 20 and more for a whole month.

Sound, full blooded young men must have had an uneasy time of it in these days. We have next the great-grandfather of our favourite "Chicken Broth."

Tusculum Galli, Cock Broth.

℞. An old Cock, well wearied with running till he falls down; then kill him, pull off his Feathers, embowel him, and stuff the body with proper ingredients, then boil them in fountain water 9s. for five or six hours, till the flesh is ready to fall off the bones, and strain out for use. It is nutritive, and restores in Consumptions, Hecticks, &c.

A pleasant afternoon occupation for the early English apprentice, was to go out into the fields, as the spring days came on, and gather *Female Vipers*, bringing them home All Alive! and here is what they did with their gatherings.

Vinum Viperum, Viper Wine.

℞. Live female Vipers, gathered in the spring time, No. vj; best Spanish Wine or Canary, lbvj; digest them (the vessel being stopt) without heat for six months, then strain out for use. Some make it by digesting the Vipers excoriated (and casting away the Bowels, Heads, and Tails) in the Wine aforenamed for some days.

It is a most celebrated thing against the Lepra Grecorum, or Leprosie, the Elephantiasis, Barrenness, Plague, &c., and prolongs life. Dose ℥iij or ℥iv twice a day for some considerable time.

We must now leave these strange times, and approach a period more fruitful in advancement. As you all know, the Company of Apothecaries obtained several Acts, giving them increased powers in and round London; but it was not until early in the present century that their jurisdiction extended throughout England and Wales. At a meeting of the Society, held on 20th November, 1812, a report was presented in which we find an unpleasant reference to some of the then existing druggists; it says, "Even druggists and their hired assistants visit and administer to the sick, their shops are accommodated with what are denominated private surgeries, and as an additional proof of *their presumption*, instances are recorded of their giving evidence on questions of forensic medicine of the highest and most serious import."

The apothecaries seem very conveniently to have forgotten their early quarrels with the physicians, which had an almost precisely similar origin. The Act of 1815 altered the position of affairs; many men then in practice, but whose qualifications were of the slenderest, entered the sacred gates of the Hall, and I well remember one of these gentlemen, who within the last few years was in practice in Somersetshire, and yet who could hardly write his name, and whose ideas of the spelling and grammar of the English language were extremely vague.

Coming now to a period within the remembrance and experience of some now living, I ask your attention very briefly to the position of pharmacy during the last half century.

A druggist's business at the commencement of the present century, whatever else it withheld or demanded, was a most toilsome and laborious occupation.

Our young men *nowadays* are accustomed *occasionally* to complain of overwork, and as things are, at the very best, few if any professions make so many and such severe calls upon a man's brain and strength as our own. But fifty years ago, the country druggist, at all events, was a perfect drudge. Occupied from early morning, and expected to be at his post till nearly midnight, required to prepare by manual labour what is now done for him by the facile agency of steam, now grinding paints or pounding with an iron pestle as heavy as a crowbar, suddenly called from this athletic exercise to draw a tooth, spread a plaster, or prepare a dozen of draughts. Expected to be civil to everybody, and to be as fresh and lively at eleven at night as at nine in the morning, with little time or strength for study, with still less opportunity for improvement, it is hardly to be wondered at if the genteel slave, whom the world hardly knew with his apron off, made little progress in scientific acquirements, or cared very much for the advancement of pharmacy.

But even at this time, and under the most adverse conditions, there were not wanting men who rose above all difficulties in their longing desire to acquire knowledge, and to elevate themselves to a position worthy of their talents. And these men met their reward. Rising at four in the morning to study chemistry, and some of them constructing a laboratory without help, pressing on through weariness and difficulty, until their end was gained; it is to men of such a spirit, determined that they would raise themselves and their fellows, that we owe much of our present position.

Such men were some of the founders of the Pharmaceutical Society. I do not purpose to speak of many of them, but I feel that any attempt to outline the history of pharmacists which omitted the mention of *William Allen* would be wholly imperfect, as his name stands out the highest ornament of our profession.

His father was a member of the Society of Friends, and William was born at Spitalfields on 29th August, 1770. Possessing comparatively few educational advantages, he yet began very early to manifest an eager desire for knowledge; and when a boy of fourteen, he constructed for himself a telescope (at the cost of fourteen pence), sufficiently good to show him the satellites of Jupiter. At the time of Allen's leaving the Rochester School, John Gurney Bevan carried on an important chemist's business in Plough Court, and there young Allen, after having failed to show any aptitude for his father's business of a silk-weaver, commenced his career as a chemist when about twenty-two or twenty-three years of age. He very soon distinguished himself, for, in 1794, he was elected a member of the Chemical Society at Guy's Hospital; and from this point he made rapid advances; he became subsequently Professor of Natural Philosophy to the Royal Institution, and in 1807 he was elected a Fellow of the Royal Society. Notwithstanding his many business and professional engagements, his chief aim was to foster every benevolent and philanthropic enterprise.

A pioneer of the abolition of slavery, one of the earliest and warmest advocates of education for the people, an active member of the Bible Society, and, in conjunction with Henry, Lord Brougham, one of the first supporters of the Society for the Diffusion of Useful Knowledge, he was foremost in the prosecution of every good work in times when benevolence was not so *fashionable as it is to-day*.

Distinguished by the notice of kings and emperors, he obtained an influence over the whole continent of Europe few men have attained; and a remarkable instance of the trust reposed in him comes to us in the fact that when, in 1815, the affairs of the Duke of Kent had become involved in apparently inextricable confusion, William Allen was called upon by his Royal Highness for advice, and, becoming trustee for the Duke's affairs, he so patiently and earnestly accomplished his labours that, by a rigid economy and restraint, he was soon successful in extricating the spendthrift nobleman from his difficulties, and eventually every one of the Duke's obligations were discharged.

Gentlemen, it is much to be diligent and successful in business, it is more still to be eager in the pursuit of knowledge and of science; but, *high over all energy and talent*, *high over all desire* to search deeply the hidden mines of learning, *high over all* the charms of discovery and the fascination of imparting it to others,—William Allen found his chief delight in *doing good*, in softening the sorrows and adding to the comforts of his fellow-men, in aiding to strike off the chains of slavery and let the oppressed go free; and it is *this*, *far more than all* his attainments and his dignities, which makes his name stand out *clear and bright*, a *beacon* guiding us to the *noblest*, *purest*, *highest*, and *divinest* life.

William Allen, as is well known to you all, was the first President of the Pharmaceutical Society. Earlier in life he had been one of the trustees of a Chemists' Association, formed partly to carry out one of his cherished desires, that his brethren should ever cultivate harmony and good feeling amongst themselves.

For centuries up to this date there had been little or no interchange of thought or friendliness amongst the English pharmacists. They had kept apart, not from any ill-feeling or jealousy, but simply because there was no cohesive power at work. All honour to the men who, in face of many difficulties and serious opposition, and desirous at once to promote a kindly feeling amongst all ranks of chemists and druggists throughout the land, and to set themselves steadily to work for the advancement and improvement of English pharmacy, commenced a movement the results of which, as we see them now, must exceed their most sanguine expectations.

Assailed by the Apothecaries, who, in London at all events, were at issue with the chemists, they united themselves partly in their own defence, and to protect their interests and preserve their independence; and a few meetings held at each other's houses resulted in a general meeting, held at the Crown and Anchor Tavern, in the Strand, and in the formation of the Pharmaceutical Society in 1841.

A very short time made it plain that, alike in London and in the country, there was a wide-spread and eager desire for a higher education and more ample opportunities for study and improvement, and that the only true shield against the sometimes merited attacks of those who looked upon the chemists as ignorant interlopers, was to provide a systematic and technical education, and eventually to make the training compulsory, and to unite the chemists and druggists of Great Britain into one *ostensible*, recognized, and independent body.

So completely was the Society a necessity, and so truly did it meet the requirements of the time, that, within little more than a twelvemonth, it became a strong and powerful institution; had opened its now famous house in Bloomsbury Square, obtained 208 Members and 196 Associates in London, and 781 Members and a similar number of Associates in the provinces,—making up a total constituency of nearly 2000, with an income of over £3000.

The future progress of the Society, its museums, lectures, school of pharmacy, professors, and examinations,—the steps by which it has, after nearly thirty years of patient and incessant labour, and, with the assistance of the Society of Chemists and Druggists, obtained for us our present position and privileges,—I merely notice.

There are many amongst us who have been more than watchers of its progress—who for years have been earnest *workers*; and I leave for them the pleasant task of giving you the history of their labours.

The veteran warrior, covered with his jewels and orders, loves to gather his children and grandchildren round him, and in the kindly light of home to tell his stories of the battle; and I hope, some winter's evening, we may be listening to some such story of the pharmaceutic war.

But, before I pass on to the concluding portion of my subject, namely "The Present Position and Future Prospects of Pharmacy," there are some few names amongst the founders and teachers of the Society which demand at least a passing mention. And amongst those to whose learning, industry, and enthusiasm we owe so much, there stands out with marked prominence one whose memory will be always fragrant to the students of materia medica, and who, more than any man of the last century, has assisted to expound and investigate the properties of the endless variety of substances which call for the study and attention of the chemist.

Need I say that I refer to Dr. Jonathan Pereira?

Born at Shoreditch in 1804, he appears to have received an indifferent education, and at the age of fifteen he was apprenticed to a surgeon practising in the City Road, London. Here he set an example to the *apprentices of* 1870, by a close and diligent attention to his duties, and by a systematic course of study, particularly directed to the classics.

Before he was out of his time, he prepared a vocabulary of medical terms,—an indication of, and a preface to, his future works.

Entering as a pupil at St. Bartholomew's, he was an earnest attendant on the lectures of Clutterbuck, Lamb, and Birkbeck, and in 1823 accepted the post of apothecary to the Aldersgate Street Dispensary, being then only nineteen years of age. The Society's license was required, before he could enter on this post, and he passed the necessary examination with distinguished honour.

Very soon his aptitude to teach developed itself, and he became a favourite with a large class of students. Before he was of age, he prepared a translation of the London Pharmacopœia, which was afterwards published, and you will all acknowledge your obligations to him as an author. Learning German and French in order better to prosecute his studies, which now occupied him sixteen hours a day, rising at six in the morning to read, and following his researches with the ardour of true genius, he rapidly advanced in the estimation of men of science. His *lectures* on materia medica appeared first in the pages of the 'Medical Gazette,' and in 1839–40 Longmans published the first and second volumes of his 'Elements.'

In March, 1842, Pereira delivered his first lecture to the promoters of the Pharmaceutical Society, and at once recognising the talent of the man, his vast stores of information, and his fitness to interest and instruct, his services were immediately enlisted, and in 1843 he became Professor of Materia Medica to the Society, and was eagerly listened to by a throng of members and associates.

From this date he became one of our best friends, and he continued his lectures in Bloomsbury Square until 1852. To him we owe a collection of upwards of 500 specimens which he transferred to the Society, many of them derived from original sources, and authenticated by special information.

An unhappy accident seems to have led to, or hastened his death, but even on a sick-bed he exhibited the same interest in, and devotion to, science which had marked his entire life. He died in January, 1853, and his earnest labours and indefatigable research single him out as one of the highest authorities on, and most distinguished exponents of, the principles of materia medica.

A host of other names occur to one as worthy of notice did time permit, but I must content myself by merely naming such men as John and Jacob Bell, Payne, Hanbury, Hudson, William Ince, Morson, Savory, and George W. Smith, all amongst the original founders and Council of the Society.

Our own city was amongst the first to form a pharmaceutical association.

The name of the Society was afterwards altered, and it became known as the "Bristol Chemists' Association," and for some years it flourished under this title. Amongst the earliest promoters and lecturers appear the familiar names of Dr. Herapath, Dr. Staples, R. W. Giles, Joseph Lancaster, Richard Owen, G. F. Schacht, F. W. Griffin, and Dr. Fripp.

The meetings were held in Tailors Court, now fallen from its high estate, and substituting party politics for science.

On the twenty-fifth of September, 1850, this second association was dissolved, and a branch of the Pharmaceutical Society was formed under the presidency and vice-presidency of the late Richard Ferris and R. B. Giles. In this organization the late Jacob Bell took a warm interest, and attended several of its meetings; it appears, however, to have been but short-lived, and for eighteen years there has existed no such Society in Bristol.

We may hope that the days of comparative indifference are past, and that we shall henceforth continue to unite together, for the furtherance of our common interests, the promotion of scientific knowledge, and the proper training of the students of pharmacy.

Every important centre in the provinces has possessed kindred institutions, and the transactions of provincial societies are amongst the most interesting records of our progress.

For more than a quarter of a century we have been slowly but steadily climbing the hill difficulty; and at last, after many haltings and much sore and weary work, we find ourselves fairly, although not yet fully, recognized by the State. It is a happy circumstance that the pluck and persistence of Englishmen, when enlisted in a good and righteous cause, rarely desert them. If you have ever in fog and mist made the ascent of one of our native mountains, only when you reached the summit to find the fog *thicker*, and the mist more dense than at its base, you will understand and appreciate the sensation of gratification and relief experienced when the sun bursts out, and the heavy clouds above and below grow thinner and whiter, and at last one by one roll silently away, and reveal to your delighted vision, glistening tarn and silvery lake, witching glimpses of mountain range and sylvan valley, rugged peaks lit up by a summer's sun, by whose light you can trace the weary paths and steep passes you have traversed, and out beyond girdling the glorious landscape the deep blue sea, a perfect setting to nature's fairest and most enchanting picture. And, gentlemen, we stand to-day on such a mountain summit, and though here and there the mists still hang thick and heavy, we can see something of the glorious prospect before us, and the wide sea of knowledge and of science circles the landscape round, and bids us press on and on, to fathom the yet unexplored depths of truth and wisdom, and to search and sound the vast expanse which every new gleam of light opens up afresh.

I do not propose to enter at any length into what I conceive to be the defects of the Pharmacy Bill of 1869; we are in good hands, and may rest satisfied that those who have done the work so well, will not leave it incomplete. But I must say this, that having imposed upon us as a profession certain, and to a very large extent wise, restrictions, and having demanded from us that in the future all who enter the portals of pharmacy shall properly qualify themselves for its important duties, we must not rest until the State assigns and secures to us as pharmaceutical chemists, the sole and exclusive right of *vending and dispensing* every class of medicine; shutting out once and for ever all who act as unqualified men, and whose existence, in the rural districts especially, offers the most easy opportunity for the mischief caused by ignorance and inefficiency.

That a chemist may, *if he must*, in order to eke out a subsistence, sell shoes, or newspapers, or sugar, may be granted, but that a grocer, utterly unqualified, should be allowed to deal in medicine, of the properties of which he knows nothing, and upon whose proper preparation and purity the very lives of the community depend, we utterly repudiate.

And no legislation will be complete until every possible means are exhausted, to put a stop to a system at once so dangerous and unfair. Our present position is a somewhat anomalous one, the recent Act wisely and properly includes, in its system of registration, all chemists in business in December 1868, and most of whom, although some of them have passed no examination, are fully qualified by knowledge and practical experience for their duties.

But our claims to be *recognized* as a profession will only be fully admitted when the public feel that we have a right to the title *not only* by Acts of Parliament, but by indisputable qualifications of our own.

And gentlemen, if you will allow me to express what, perhaps to some, may seem a heterodox opinion, *I do not believe* those claims will ever be conceded, until we thoroughly expunge from our business every quack remedy, and quackery in all its forms. I am well aware that the subject is surrounded with difficulties, and that a way of escape from the trade in patent medicines is not easy; all I do say is, that until this is done, we may call ourselves what we please, and present or future Acts may confer upon us titles or privileges; the public will properly refuse to recognise as professional men, dealers in every variety of nostrum. We may hope that with increasing intelligence amongst the masses, and a higher education amongst ourselves, this difficulty will eventually clear itself away.

The business side of pharmacy, as it at present exists, demands a passing notice. It is a popular theory, but unhappily for us, a popular delusion also, that our profits are about elevenpence out of the shilling, and that the chemists and druggists of Great Britain are very prosperous men.

I have taken some pains to ascertain the average amount of returns (not profits remember) of the retail and dispensing chemists throughout England and Wales, and after many calculations I cannot make them more than £440 per annum.

Now, when it is remembered that out of this magnificent sum, rent, taxes, gas, salaries, wages, and general trade expenses have to be disbursed, in addition to the cost of goods, and interest upon capital, the whole preceded by an expensive education and apprenticeship,—it is evident that even at the best the results are almost ludicrously small; and I do not hesitate to say, that there is no business in existence demanding so much from its members, and giving so little in return.

The question of prices is out of my province, and I shall therefore content myself with saying, that I think some scale of fees for the dispensing or purely professional part of our business, based upon the number of doses ordered, might with advantage be agreed upon.

In conclusion, gentlemen, I must say, on the future prospects of pharmacy in England,—and it is evident that they never were more promising than they are to-day,—with a recognized status, and the certainty that all those who henceforth enter into our ranks will possess qualifications of a higher order than has been at all possible in the past, we may venture safely to predict a gradual improvement in our position and emoluments.

But the real and ultimate advantages will depend very largely upon those for whose especial benefit such associations as our own have been formed.

We have done great things *for you*, we shall expect great things *from you*.

I would say to all present, who are looking forward to occupy the front ranks in the future, *use well your* opportunities. Make yourselves worthy of the position sought for you, and your prosperity is certain. There is every disposition, upon the part of employers to give all necessary facilities for study.

The long hours and undue pressure upon strength and brain, which was the rule in the past, is fast giving way; and I must say that I earnestly advocate shorter hours of labour, provided that the time willingly abridged from work is usefully and properly employed. I do not believe that there is any real necessity for the excessively late hours which have been generally adopted in the drug trade.

Our own experience, as a firm, has decided us to close, for all general business, at seven o'clock every night (Saturdays included); this has worked well, and I should like to see the same rule generally adopted in Bristol.

But no such movement *is possible*, unless, in return, our young men give an earnest and watchful attention to business during business hours.

I should like you to feel, gentlemen, (and I speak now particularly to the younger portion of my audience,) that the interests of employers and assistants are identical, and that, if we are to give up some of *your* time, you must prove to us that you know how to make use of it. If the hours relaxed are to be spent in the theatre, the tavern, or the billiard room, in forming habits which can only mar your future prospects, and bring disgrace upon yourselves and your brethren, then it is far better that you should be at any drudgery at home; but, if using part of your spare hours in proper and wholesome relaxation, and in those athletic exercises which are quite as necessary as hard reading, you will seek diligently to improve your minds, and to prepare yourselves for occupying distinguished positions as men of education and science in the future,—then all will be well. *But only then;* and you and we alike will, by-and-by, have to regret the very opportunities that are given you if those opportunities are abused. But, gentlemen, I hope and believe better things of you than this; and I take your presence here to-night, and the interest you have shown in this association from its commencement, as an earnest of your own heartfelt desire to raise *yourselves*. Remember, *you* are to rule circumstances, and that circumstances are not to *rule you*.

There is no lack of ability and no lack of power; it only needs that you direct that power and ability into the proper channels. And I have faith enough to believe that the greater majority of you will do this; and, if some of us are spared twenty or thirty years, we may see, nay, we *shall* see, a class of men all over our land who will be looked up to, not only as good and faithful citizens, but as worthy and honoured members of a profession which will have become quite as distinguished, and compel quite as much of public respect and admiration as is accorded to the members of the Bar, the Senate, or the College of Physicians.

I have only now, Mr. Chairman, and ladies and gentlemen, to apologize for taking up so much of your time, to thank you for your very deep, kind attention, and to wish you every one a future of uninterrupted and increasing happiness and prosperity.

GLASGOW CHEMISTS AND DRUGGISTS' ASSOCIATION.

Session 1869-70.

The Twelfth Meeting of the Session of this Association was held in the Mechanics' Institution, Bath Street, on the evening of Thursday, the 24th of March last; Mr. M'Millan, President, presiding. There was a large attendance of members.

Mr. A. **Paterson**, on being called upon, delivered a highly interesting lecture on the "Seven poisonous plants of the Modified Examination." In course of his introduction, Mr. Paterson referred in eloquent terms to the study of botany, apart from other sciences, and gave a passing explanation of some of the terms used in botany; after which he took up the *seven poisonous plants* in their alphabetical order, and pointed out their chief botanical characteristics, illustrating his remarks by exhibiting specimens of the different plants, which he had, with great difficulty, collected from various parts of the country, and explaining very minutely how they were distinguished from other plants of a similar construction. At the conclusion of the lecture, Mr. Paterson was awarded a very hearty vote of thanks for the amount of instruction received.

In accordance with the notice given at last meeting, Mr. Paterson then proceeded to read the memorial which he proposed should be transmitted to the Council of the Pharmaceutical Society.

The motion was seconded by Mr. J. M. **Fairlie**, and was unanimously agreed to.

After a few verbal alterations had been made, the memorial read as follows:—

"*Mechanics' Institution, Bath Street, Glasgow,*
"*24th of March*, 1870.

"To the Honourable Council of the Pharmaceutical Society of Great Britain,
17, Bloomsbury Square, London.

"Gentlemen,—We, the Members of the Glasgow Chemists and Druggists' Association, while approving of the steps taken by you for the improvement and elevation of the drug trade by education, etc., deeply regret that you have so far overlooked the first principles of the Society, viz. the education of the individual, leaving him to manage his business according to his own discretion, and the peculiar circumstances of his trade and locality,—as to interfere in trade matters.

"That you mean to adopt measures contrary to those principles, is clearly expressed in the sentiment of the resolution regarding the 'Regulations as to the Keeping and Dispensing of Poisons,' which is reported in the transactions of your Honourable Council, in the Pharmaceutical Journal of last January.

"We, therefore, humbly request your reconsideration and rejection of the above Regulations, one and all,—our opinion being, that if allowed to become law, they will be a source of annoyance and inconvenience to the dispenser, and will not, to any appreciable extent, add to the safety of the general public.

"We have the honour to be, Gentlemen,
"Your most humble servants,
"*Pro* the Glasgow Chemists and Druggists' Association,
"(Signed) **John M'Millan**, *President*,
Archibald Paterson, *Vice-President*,
James M. Fairlie, *Secretary*."

HULL CHEMISTS' ASSOCIATION.

The usual Monthly Meeting of the above Association was held on the 7th instant, at the Cross Keys Hotel; the President, Mr. **Baynes**, in the chair.

After the routine business had been gone through, the following resolutions were most unanimously adopted, and the Secretary was instructed to forward them to the Secretary of the Pharmaceutical Society:—

First. That whilst chemists generally would doubtless welcome and, as far as possible, adopt any suggestions tending to lessen the risk of accident, this meeting is of opinion it is practically impossible to lay down any rigid rule (applicable to all establishments alike) with respect to the keeping, selling, and dispensing of "poisons," and that the enactment of such a law would seriously trammel and increase the responsibility of chemists and druggists, without leading to greater safety on the part of the public.

Second. That the proposition to supersede the exercise of reasonable care and intelligence in the keeping, compounding, and administration or use of "poisons" by mere mechanical arrangements of angular bottles, etc., is open to grave objections. One result of such proposition would be to place in almost every house a "distinctive bottle of poison," easily accessible to the suicidal and mischievous.

Third. That this meeting recognizes the services rendered to the trade and the cause of technical education by the Pharmaceutical Society, but strongly deprecates all over-legislation or undue interference with a business so varying in its character and details as that of a chemist and druggist; feeling assured that the effect of any pecuniary penalty in inducing caution would be trifling and insignificant compared with that arising from the mental suffering and heavy loss of business following a case of poisoning, whether accidental or otherwise.

Fourth. That in the opinion of this meeting, in the cases of persons in the country failing to pass the Preliminary Examination, that the fee retained by the Society should not be more than five shillings, especially as the local secretaries have all the trouble.

LIVERPOOL CHEMISTS' ASSOCIATION.

Eleventh General Meeting, held March 17th, 1870; the President, Mr. J. **Abraham**, in the chair.

The **President** spoke of the meeting of the Pharmaceutical Conference in Liverpool, and gave an account of the proceedings at the meeting of the Chemists and Druggists of Liverpool, held on March 9th. He invited those present to become members of the Conference. He then mentioned some researches on the igniting-point of petroleum, made by Dr. Calvert.

Mr. H. S. **Evans** exhibited a spectroscope with an arrangement to mark the position of absorption bands in solutions of organic substances. A narrow line of light is cast upon the spectrum, and by means of a screw and index its position can be changed and registered.

Mr. H. S. **Evans**, F.R.M.S., etc., then read a paper on "Chloral Hydrate." The author gave an account of the history of chloral and of its formation from absolute alcohol and dry chlorine, illustrated by a diagram of the chemical decompositions involved. It decomposes in presence of alkalies into chloroform and formic acid, and to this reaction Liebreicht ascribes its sedative action, the alkalinity of the blood causing the evolution of chloroform throughout the system. A process has been proposed for making it from glucose by saturating it with hydrochloric acid gas, and then distilling it from peroxide of manganese. Chloral unites with water to form a hydrate, in which state it is permanent; if kept anhydrous it is apt to pass into an allotropic state, insoluble in water.

In describing some experiments on animals made with chloral, the author took occasion to justify the study of therapeutics by chemists, as it was desirable that they should know the action of the medicines they dispensed, so that they might judge as to an overdose. As to the administration of chloral, Bouchet says that subcutaneous injection is dangerous, and that disagreeable consequences often follow when it is taken into the stomach, and he recommends injection per rectum. It is useful in insomnia, delirium tremens, hooping cough, and many spasmodic diseases. Chloral is also used in photography, as it increases the sensitiveness of the prepared plate, and the intensity of the picture.

Mr. **Mason** said that the process of Professor Staedaler for making chloral from glucose yielded an impure and unsatisfactory product, contaminated with chlorides of carbon, etc., and that to the use of such a preparation some of the unfavourable symptoms might be due. He had endeavoured to find out the process now used, but without success. The workmen could not be got to work at it more than about eight days, and the price would consequently remain high. He had been in communication with a medical man in Liverpool who had administered chloral very successfully in mania. In four remarkable cases cited, very beneficial results were obtained; in one a complete cure of a bad case of madness in a lady was dated from the administration of twenty grains of chloral in two 10-grain doses. It was not found to interfere with the appetite of the patients, but it was essential that the bowels should be kept regular. It was administered in 20-grain doses, supplemented by ten grains at intervals, if required.

Mr. **Stewart** had also been informed of the good effect of chloral in the cases cited.

Dr. **Oxley** said that he had found it to do well at first, but then it produced gastric irritation, and asked what medicines would be suitable to use with it. A child who had taken three grains vomited severely. Two grains had made a young lady sleep eighteen hours. In another case 10 grains gave a comfortable night's sleep, but on repeating the dose, violent vomiting ensued. He had not so good an opinion of it as he had at first, and he found that it produced a horrible taste in the mouth.

The **President** said that chloroform often produced vomiting and other unpleasant effects, and that many investigations would be necessary before the best method of administering chloral, and the precautions to be observed, were ascertained.

A vote of thanks to Mr. Evans, proposed by Mr. **Murphy** and seconded by Mr. **Stewart**, was carried by acclamation.

Twelfth General Meeting, held March 31st, 1870; the President in the chair.

Mr. Parry, 345, Scotland Road, was unanimously elected a member of the Association.

A donation was announced of a framed portrait of Mr. H. S. Evans from the publishers of the 'Chemist and Druggist,' and thanks were voted.

Mr. **Hargreaves** exhibited a label used by Mr. Delf for poisonous substances, printed boldly in black on a bright red ground.

The **President** read the account of a case of poisoning by strychnine at Pemberton, in which a surgeon gave it by mistake for santonine, from an unlabelled bottle. He said that wholesale druggists should send out poisonous substances in distinctive bottles, as they were often retained in the original bottles, and if kept in a damp cupboard, the labels might fall off.

The **Secretary** read a letter from the Manchester Chemists' Association, and a circular from the Leeds Chemists' Association, both opposing the proposed regulations for the keeping and dispensing of poisons.

The **President** opened a discussion on these regulations, which had been announced as the business of the evening. Comparing a Pharmacopœia of 1803 with modern ones, he found that at that time there was not much need for regulations, as the number of active poisonous substances was then small. Since that period the vegetable alkaloids and many potent remedies have been discovered, and long since precautions in dispensing these have been felt to be necessary. Distinctive bottles were suggested some years since, and many other methods have been tried. By the Act of 1868, the Pharmaceutical Society was authorized to make regulations, and it was now thought desirable to exercise this power. No one is more interested in carefully observing good regulations than the chemist, and he, personally, was in favour of the regulations. He thought that two or three years should be given during which time it should be recommended that these regulations should be observed, as this would give time for suggestions. In other countries locking up poisons was ordered; but the list of poisons in the Pharmacopœia Germaniæ and the Pharmacopée Française was much smaller than ours. The argument of the Leeds chemists, that surgeons would not be subject to these regulations, is rather an argument in their favour, as the public would prefer having their medicines prepared where every precaution was taken. In medicines for external use, the corrugated bottle is better than a label, as that might come off.

Mr. **Redford** thought the communications from Manchester and Leeds excellent, and quite agreed with them. He acknowledged that violent poisons should be locked up, but the list was now so long that the object would be defeated by any method which applied to all; as the liability to mistakes *inter se*, as between strychnine and morphia, would still remain. He objected to remove tincture of belladonna, etc., from his shelves, and was opposed to compulsory legislation on the subject altogether.

Mr. **Shaw** sympathised to a certain extent with the chemists of Leeds and Manchester, and was opposed to legislative action interfering with the manner of carrying on business. The public did not demand it, and if the chains were once riveted on, there would be great difficulty in removing them. He approved of the regulations if they were simply to be recommendations, but thought that unbending rules could not be observed.

The **President** said that there were two questions to be discussed: first, Are the regulations good? and second, Should any regulations be made compulsory? It would be well not to confound these. He thought other plans might be suggested, such as a poison cork.

On the motion of Mr. Wilson, seconded by Mr. Mason, the discussion was then adjourned.

BRITISH PHARMACEUTICAL CONFERENCE, 1870.

A meeting of the chemists and druggists of Liverpool and neighbourhood was held at the Royal Institution, on Wednesday, March 9th, to consider the arrangements to be made for the forthcoming meeting of the British Pharmaceutical Conference. The meeting was called by circular, and was well attended.

Mr. Abraham, who was unanimously elected chairman, gave an account of the origin and history of the Conference. He urged its claims on their hearty support, as tending to improve pharmacy in its scientific, practical, and social aspects. He explained that the object of the meeting of that day was to appoint a local committee, who would collect funds and make such preparation for the Conference as should be thought desirable.

Mr. Robinson hoped that Liverpool would give a reception to the Conference at least equal to that met with in smaller places. The number of chemists, both wholesale and retail, in Liverpool, ought to make the success of the Conference certain.

A general conversation followed, in which the general feeling was that there should be a dinner, an excursion, and an exhibition, and that about £300 would be required.

Mr. J. M. Buck moved, "That a Committee be appointed, consisting of six members of the Council of the Chemists' Association, with twelve members to be elected now, and these to have power to increase their number to twenty-four. That the local Vice-President, the two local Secretaries, and Mr. Robinson as member of the General Committee, be *ex officio* members of the Committee. Any one elected a member of the Committee, and not signifying his acceptance of the office, his election to be void, and his place to be supplied by the Committee."

Mr. Murphy, F.C.S., seconded the resolution, which was carried unanimously.

The meeting then proceeded to the election of the Committee. The following is a list of the Committee as far as at present appointed:—

Ex officio Members.

Mr. J. Abraham.
Mr. E. Davies, F.C.S.
Mr. J. Dutton.
Mr. J. Robinson.

Mr. H. S. Alpass.
" J. M. Buck.
" G. Barber.
" H. Coupland.
" T. Dod.
" E. Evans, sen.
" A. H. Hingston.
" A. T. Horton.
" W. Jarvis.
" C. Jones.
" S. Johnson.
Mr. R. Lathbury.
" A. H. Mason.
" M. Murphy.
" J. Pendlebury.
" A. Redford.
" J. Shaw.
" C. Sharp.
" R. Sumner.
" J. Thompson.
" J. A. Turner.
" J. Woodcock.

At a meeting of the Local Committee subsequently held, the following officers were appointed:—

Mr. Abraham, *Chairman.*
Mr. Sumner, *Vice-Chairman.*
Mr. Davies, *Secretary.*
Mr. Shaw, *Treasurer.*

MANCHESTER CHEMISTS AND DRUGGISTS' ASSOCIATION.

The last ordinary Monthly Meeting of the session was held in the Memorial Hall, Albert Square, on Friday evening, April 1st; Mr. Hampson in the chair.

The Chairman announced that a room had been engaged in Mitre Buildings, Cathedral Gates, which it was intended to open for the present on Tuesday and Friday evenings, from six to ten; students wishing at other times to refer to the materia medica specimens, etc., must apply for the keys to Mr. Woolley, 69, Market Street, or to Mr. Benger, 1, Market Place.

Contributions of books, etc., for the library were earnestly solicited.

Mr. F. B. Benger (Hon. Sec.) then announced a donation from Mr. Thomas Hyde Hills (London) of an artist's proof engraving of the late Mr. Jacob Bell, from the picture by Sir Edwin Landseer, and smaller engravings of Dr. Pereira and John Bell, accompanied by a letter conveying Mr. Hills' good wishes for the success of the Association.*

A vote of thanks, proposed by Mr. Woolley and seconded by Mr. Morton (Ramsbottom), was carried with acclamation.

Mr. Waterhouse (Ashton), after expressing his fears that a really useful library could not be formed by the unsystematic donations of books from members, proposed—"That a Special Library Fund of £100 be raised, and that a circular be at once issued, soliciting the aid of members and their friends."

The resolution was seconded by Mr. Woolley, and carried unanimously; four gentlemen, viz., Mr. Pritchard (Chorlton Road), Mr. Waterhouse (Ashton), Mr. Brooks (Shudehill), and Mr. Hayward (Deansgate), immediately promising donations of five guineas each to the fund.

Mr. Benger then showed and explained a number of experiments illustrating the chemical action of light. Photographs of ferns, etc., were printed by the light of burning magnesium; glass bulbs containing a mixture of chlorine and hydrogen were shown to be unaffected by the yellow and lower rays of the spectrum, whilst the blue and more refrangible rays caused them to explode by the instantaneous combination of the gases and production of hydrochloric acid gas.

Mr. J. T. Slugg, F.R.A.S., read an interesting and amusing paper on "Triplicity," illustrating by innumerable instances the tendency that exists in nature and human nature to group objects, words, sentences, etc., in "threes."

Mr. Bostock and other speakers urged the associates to employ their spare time during the summer months in collecting a good herbarium for the Association, and suggested that a prize should be offered for the best collection.

It was announced that special meetings would be called during the summer to discuss any important question which might arise in connection with the trade.

NOTTINGHAM AND NOTTINGHAMSHIRE CHEMISTS' ASSOCIATION.

A Meeting of this Society was held at the Exchange Rooms on Friday, April 8th.

The Prizes for the Materia Medica and Pharmaceutical Chemistry Classes were awarded, the Senior to W. P. Bothamley and W. Johnstone, the Junior to Evan Jenkins and E. Ward. The President announced that the examination was very satisfactory, considering the time the classes had been formed.

Mr. Burnie then delivered an address "On the Amusement and Recreation to be derived from, and the Advantages to the Pharmaceutist obtained by, the Study of Botany." The following is an abstract:—

In his opening remarks, Mr. Burnie stated that, while the acquirement of every kind of knowledge was difficult, the acquirement of scientific knowledge was, from a variety of causes, especially difficult, and its pursuit to the beginner appeared unattractive and devoid of interest. It was well, if we could, to increase the attraction, and render the difficulties less formidable in appearance; and therefore it was proposed on this occasion to consider, not only the advantages to be derived from the study of botany, but also the amusement and recreation which it might be made the means of affording. The advantages which the gentlemen present would derive from the study were of a twofold character, having reference to their position, on the one hand, as students of pharmacy, and on the other as young men anxious to improve their reasoning and perceptive faculties, and to extend their knowledge of nature. He was fully conscious of the temptation to which every teacher was exposed of overrating the importance of his own subject, and, while anxious to avoid this error, felt nevertheless that he was justified in affirming that, in the ease with which botany may be studied, in the pleasure afforded by the study itself, and in the worth and value of the knowledge when acquired, botany was second to no other science. A sketch was then given of the plan of study to be pursued in the botanical class about to be established, and the address concluded with some remarks on the natural system of classification, the Order *Atropaceæ* being especially referred to as affording a remarkable example of natural affinity amongst its members, the juice of every one of which has the property of dilating the pupil, and probably contains the same alkaloid, atropia.

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* Mr. Hills has since forwarded to the Secretary a cheque for five guineas, "in memory of Jacob Bell," to the special library fund.

A cordial vote of thanks was proposed to Mr. Burnie for his very interesting address, and carried unanimously.

THE SCARBOROUGH CHEMISTS' ASSOCIATION.

The Monthly Meeting of the above Association was held on Monday, April 4th, when the chief business of the evening was to pass most unanimously, without a single dissentient, a resolution condemning the proposed regulations for the keeping and dispensing of poisons, so far as they shall be compulsory, as a most unnecessary restriction on the liberty of the chemist, and entailing further responsibilities of great magnitude, without any corresponding advantages.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL ASSOCIATION.

A Special Meeting of this Association was called for Wednesday evening, March 30, on account of the lecturer, Mr. GEORGE HARRISON, F.L.S., F.C.S., having to go abroad earlier than was anticipated. The subject of the lecture was "Nitrous Oxide, or Laughing Gas, and its Application to Surgical Purposes;" Mr. WILSON, the President, in the chair.

The history of the gas was first dwelt upon. It was discovered by Priestley in 1776, and the gas, as well as the substance from which it was made, were partially investigated by Sir Humphry Davy.

Sir Humphry Davy, Mr. Wedgwood, and the poet Southey, who called it "the gas of Paradise," were among the first to experience its pleasant effects.

The gas was made experimentally and its chemical properties fully shown. To illustrate its power of producing anæsthesia, the lecturer took the gas, and in fifty seconds from the inhalation, total insensibility to pain was produced. The President then inhaled it, and caused some amusement on telling the audience his pleasant sensations while under its influence.

The lecturer then stated that for short operations, as taking off a finger or the extraction of a tooth, it was superior to any anæsthetic known. Its advantages over ether or chloroform are, that under its influence the patient suddenly becomes insensible, and quickly recovers consciousness—the inhalation being unattended by nausea and the dangerous effects incidental to chloroform and ether. To bear out this remark, the lecturer read several certificates from some of the most influential men in the town, kindly lent to him by Mr. Harrison, dentist, St. James Street, who during the past fifteen months, has administered the gas in some hundreds of cases. Mr. Harrison, in conclusion, stated that although the gas was discovered by one of our own countrymen, an American, Mr. Morton (a pupil and then assistant of Horace Wells, who first applied it in dentistry), has petitioned Congress for an appropriation of £40,000, as a reward for his exertions in applying it to surgical purposes.

Some discussion then took place, chiefly on the safety of administering the gas.

Mr. Harrison, dentist, stated that he did not think it advisable to administer it to consumptive patients, but it was on record that it had been administered without the slightest accident to 300,000 patients, many of whom suffered from epilepsy and disease of the heart.

The usual vote of thanks brought the proceedings to a close.

SUNDERLAND CHEMISTS' ASSOCIATION.

The Annual General Meeting of the above Society was held in the Athenæum on Monday, April 4; W. Thompson, Esq., President, in the chair.

The Report of the Council for the next year was read by the Secretary, and the Financial Report by the Treasurer. After both had been moved and adopted, the following gentlemen were elected officers for the ensuing year:—

President.—William Thompson, Esq. (Mayor).

Treasurer.—R. Robinson.

Secretary.—J. J. Nicholson.

Council.—Messrs. J. Harrison, Bird, Sharp, H. Thompson, Lord, Laurens, Nasbet, Dalby, Sidgwick.

Report of the Council.

"The Council, in presenting this their first annual report to the Members and Associates of the Society, beg to congratulate them on its present promising position and fair prospect of future success.

"The Society now consists of thirty-six Members and twenty-three Associates, and for these latter, a class for instruction in elementary chemistry has been formed, under the superintendence of Mr. Curry, Professor of Chemistry at the Grange School. This class is well attended, and the progress of the students very satisfactory.

"The present session was opened in October, 1869, by an inaugural address from Mr. Brady, F.C.S.; and since then, at the monthly meetings of the Society, lectures have been delivered by the following gentlemen:—

In November, by Mr. J. J. Nicholson, on 'Structural Botany.'
In December, by Mr. J. Harrison, on 'Elementary Chemistry.'
In February, by A. S. Donkin, Esq., M.D., Lecturer on Medical Jurisprudence to the University of Durham, on 'Poisons, and their Action on the Human Body.'
In March, by Mr. D. B. Sharp, on 'Materia Medica.'

"The Council have also exercised a general supervision over the interests of the trade, and will feel themselves bound at all times to continue this for the advancement of the general welfare.

"The Council have great pleasure in announcing that they have succeeded in engaging two rooms, at No. 60, Fawcett Street, where it is purposed to establish a library, lecture and reading-room, and to transact generally the business of this Association.

"In conclusion, the Council beg to tender their sincere thanks to both Members and Associates for the hearty manner in which they have been supported in the discharge of their duties, and trust that this Society, by the exertions of all, may still further extend in numbers and usefulness.

"(Signed) Wm. Thompson, *President*,
R. Robinson, *Treasurer*,
W. Dobinson,
R. E. Dalby,
W. Bird, } *Council.*
D. B. Sharp,
J. Harrison,
J. J. Nicholson, *Secretary.*"

ORIGINAL AND EXTRACTED ARTICLES.

THE COMPOSITION OF CHLORODYNE.

BY A PROVINCIAL.

A Brother 'Provincial' is obliging enough to take me to task for what I have had to say concerning chlorodyne, my remarks and conclusions respecting which, I regret to find, seem both to dissatisfy and displease him. But, before proceeding to notice his strictures, I would remind him that when he takes upon himself the office of critic, the least we have a right to expect of him is that he shall be accurate; and that he shall neither misstate the language nor misrepresent the meaning of his principal. And if, in this instance, I am unable to compliment him upon his critical candour, it is because he appears to have trusted too much to his memory, and to have written without having before him the papers upon which he professes to comment. For I will not suppose that the series of errors and misrepresentations which I shall have to point out are other than unintentional,—the result of haste and oversight. In penning this paper, my talented friend forgot one thing, and, forgetting that, forgot to be careful. He forgot that, though his paper constitutes a reply, after a reply comes the rejoinder. Had he remembered this, I think he would not have laid himself open to the animadversions which, in justice to myself, and in the interest of the subject, I shall be compelled to pass upon his critique, the reading of which forcibly recalled to my recollection the celebrated suit of Peebles *v.* Plainstanes, when counsellor Tough arose to undo all that previously had been done, and to envelope in renewed obscurity and uncertainty a subject which at least had approached, even if it had not fully arrived at, a state of *éclaircissement.*

"A word spoken in due season, how good it is!" an apothegm which makes us regret that 'Another Provincial' had not thought it worth while, in response to my September invitation, to communicate his information and ideas respecting chlorodyne while the whole matter was still *sub judice*, and when his abilities, instead of being wasted in mere fault-finding, might have helped to promote a settlement of the question. Instead of which, he has waited, until five months having elapsed, and no more witnesses having come forward, the case, in default of further evidence, had been summed up, and judgment pronounced. Not that I question for a moment his fullest right to reopen it; but it would have been more gracious, as well as more convenient, if his first appearance had been put in at an earlier stage of the controversy.

Or, is it that my brother holds a brief for the defence? Many considerations should acquit him of the supposition; but there is so much that is like special pleading in his paper,—he so misrepresents and twists what I have said. —that one can scarcely help regarding him in the light of an advocate rather than in that of a disinterested inquirer. This is the more to be regretted, because he possesses such undeniable ability, displays so much vigour, and is so capable of arguing a good cause on its merits, that when we see him resorting to means so unworthy of his talents, practising, in effect, the maxim "no case; abuse plaintiff's attorney," we are compelled to believe that he feels that he really *has* no case.

I proceed to correct, *seriatim*, some of the inaccuracies to which I have referred.

1st. 'Another Provincial' commences his paper by observing that I "complain that few chemists have noticed my statements about chlorodyne." I have said nothing of the kind,—nothing half so arrogant. If he will take the trouble to refer to the words, he will read that I regretted that so few had responded to my "*invitation;*" and this invitation was not, as he says a little further on, "to indulge in speculations on the composition of chlorodyne," but "to bring forward their *experiences* of one kind or another."

2nd. He next objects that I have drawn my inferences from a solitary case. But my sharp-sighted critic is too hasty in fancying that he has caught me napping. If he himself had been a little more attentive, he would, in the first place, have noticed that I put forward my case only as a "*leading*," *i. e.* as a typical or illustrative case; and, secondly, he would not have overlooked the last paragraph but one in my first paper, viz., "And a long course of observation has furnished me with numerous corroborative proofs," etc. Surely he will concede to me the same benefit, resulting from opportunities of "becoming acquainted with the nature of this compound," which, in his second paragraph, he claims for himself.

3rd. 'Another Provincial' objects to the fairness and validity of my case, that "when a patient has taken chlorodyne for three years and three months," etc. But the patient only took chlorodyne in *his* sense ("chlorodyne *ver.*") for three months, at the expiration of which time it was succeeded by a preparation which certainly did not contain belladonna. To this extent, therefore, his requirement that a solution of morphia should be substituted after a few weeks' trial of the original chlorodyne, in order to give the inference drawn greater weight, was virtually fulfilled, especially as this substituted chlorodyne contained no active ingredient, except hydrocyanic acid, beyond the solution of chloroform and morphia. And when, at the end of three years, this acid was withdrawn, the patient continued to experience, not only the same *amount* of benefit from the plain morphia, but also precisely the same *kind* of benefit as before.

4. My provincial brother has a rather one-sided notion of administering justice. When I advance and support views which *I* have long entertained, he "thinks it clearly apparent that I have framed a *theory*, and am anxious to make everything square with it." But when speaking of views which *he* has long entertained, he styles them "the *opinion* I have long entertained." Now, surely what is sauce for one 'Provincial' should at least be seasoning for 'Another.'

5th. Speaking of my second paper, he states that I rest my *proof* that chlorodyne is only a disguised solution of morphia entirely on the case related in the September number (and on Mr. Smith's analysis). I am afraid that this is only another *proof* of my critic's carelessness, for that case is never once referred to in the paper in question.

6th. The next instance to which I have to advert, though I do not impute it as intentional, yet has all the effect of a direct misrepresentation, or, rather, of three misrepresentations rolled into one. 'Another Provincial' says, "The only . . . proof that chlorodyne does not owe any of its efficacy to belladonna is the negative evidence of Mr. E. Smith's analysis, which 'A Provincial' admits may not be absolutely conclusive." In this sentence the word "*which*" refers to the phrase "negative evidence" (viz. the fact that no atropia was detected). But my critic applies it to the phrase "Mr. E. Smith's analysis," and goes on to say, "After this admission it is surprising to find, a few lines further on, 'this was the one and the obvious thing wanting to settle the controversy;'" and he proceeds to ask, "How so, if it is not conclusive?" Now, the 'THIS' which I said was "the one and the obvious thing wanting," etc., was *the analysis undertaken by Mr. E. Smith;* while the 'IT' which I said might not be absolutely conclusive was the *negative evidence.* By this adroit shuffling of his pronouns, my reviewer would fain make me appear to contradict myself. But why does he add that, "*in opposition to* me, he thinks the most careful analyst *might* fail to find atropia?" For have I not most distinctly admitted the possibility? while, in his own quotation above, he has himself referred to, and commented upon, this admission. And, finally, why does he go out of his way to cavil at the epithet 'painstaking,' as applied to Mr. Smith's analysis,—an epithet purposely selected on account of its neutral tone,—as though painstaking did not already imply both "reality" and "conscientiousness?"

7th. If 'Another Provincial' had read, as carefully as an intending critic should have read, the two papers which he professes to review, he would have seen that the incidence of my remarks touched neither the makers, nor the sellers, nor even the takers of chlorodyne, as he is pleased to suggest, but its *prescribers*. And, if he is really of opinion that there are not numerous practitioners who would be "easily deluded by a happily-chosen name," etc., I can only say that, either he must be a much younger man, or he has been much more fortunate in his experiences, than myself.

Naturally, I regret that by so accomplished a critic I should be thought to have failed in my aim "to set chlorodyne on its right footing," etc.; and I am equally sorry that my writing is too "tall" to suit his Procrustean taste,—though it *is* a little remarkable to see such an opinion conveyed in language so *elevated*. But surely he exaggerates the proportions of the whole affair, when he can apply such an epithet as "boasting" to so small a matter as the exposure of these medicinal pretensions.

Deducting two-thirds of the paper which has just been examined, which two-thirds are devoted to the *negative* business of strictures—mostly misdirected—upon my two articles, the only *positive* deductions to be gathered from the remainder are contained in the second section; wherein 'Another Provincial' not only maintains the opinion that Dr. C. Browne's chlorodyne contains an operative proportion of belladonna, but, further, goes beyond all precedent in saying that we should perhaps rather ascribe its efficacy to belladonna modified by morphia, than to morphia modified by belladonna,—a proposition that may safely be left to dispose of itself. As to the tobacco which he suggests in a note, and which Dr. Dowse glanced at incidentally as a possible alternative to Indian hemp, it is altogether too hypothetical for serious notice.

Quite apart from the fact whether Dr. Browne's chlorodyne does or does not contain belladonna, his remarks on the balance of the effects of active medicines, when exhibited jointly, are interesting, ably stated, and highly probable. Why, indeed, should there not be the same kind of composition and resolution of medicinal, as of physical forces? In fact, the tendency of present investigations is setting strongly in the direction of proof of this hypothesis.

I gather, then, that he is of opinion that Dr. Browne's chlorodyne contains nearly or quite sufficient belladonna to balance and react upon the quantity of morphia; *i. e.*, according to his note, a quantity equal to about a twelfth of a grain of sulphate of atropia to the ounce. I gather, secondly, that he considers that the mean effects of this compound of atropia and morphia are further modified by (tobacco), chloroform, and prussic acid. And though he gives us no reason whatever for these two opinions—not so much as even a solitary case—beyond the fact that he has long held them, and that the case reported by Dr. Dowse seemed to coincide with them, still, as he means them as a contribution towards the elucidation of the subject, we will accept the will for the deed, the intention for the performance, and thank him accordingly.

For the rest, I incline to think that our mutual readers will be of opinion that, after having essayed to pull down all that had been set up, and having himself built up nothing, 'Another Provincial' has left the question much where he found it.

THE CONSTITUTION OF BODY, ETC.

BY AN ATOM.

As Mr. Tilden is good enough to consider my sketchy papers worth his notice, I trust that I may not be pushing the matter too far if I endeavour, very briefly, to clear up those points on which we virtually agree, and to bring into stronger relief those upon which we still differ; these last being chiefly, the expediency (for I am gratified to find that he recognizes the propriety) of dropping the use of the word matter in chemical inquiries; the problem which I have stated as (x); and the relation of heat, light, etc., to motion.

I follow his observations in the order of their occurrence.

1. I have not maintained, as Mr. Tilden appears to suppose, that the fate of chemistry hinges upon that of *the*, or even of *any* particular atomic theory. What I said was, that *an* atomic theory was an absolutely indispensable hypothesis, etc. I should even be far from holding that the present version of that theory is either complete or final. For, though it suffices to explain the majority of facts which have hitherto been brought under observation, and, if liberally interpreted, would probably account for all, it is quite possible that, like the Ptolemaic system of astronomy, which, with its mazy complexity,—"cycle in epicycle, orb on orb,"—still managed to explain and account for the movements of the heavenly bodies, atoning the original falsity of its stand-point by a most ingenious system of compensations and adaptations; it, too, may some day have to give place to a more Copernican theory, which shall command the immediate assent of all. The essential principle of any atomic theory is the absolute finity of physical parts; and these chemistry is compelled to accept as her first data—the primary elements with which she has to deal; but into their nature, unless as matter of curiosity, she has no more need to inquire than the recipient has to look a gift horse in the mouth.

2. In styling chemistry a science of precision, I spoke of the intrinsic *nature* of the science, not of its present *condition*, which, as Mr. Tilden observes, was subsequently characterized as that of childhood. Just as, before Thales, one would still have been justified in terming geometry a science of precision, though, up to that time, its condition was only such as its name expresses, viz. an art of mensuration.

3. Undoubtedly Mr. Tilden only employs the term matter in the sense common with nearly, or quite, all physicists; nor did my remarks individualize him as doing anything exceptional. But he will pardon me for saying, that I cannot see that chemistry has anything whatever to do with matter, which is a word that, unless when opposed to force, should never be heard within its precincts. It is true that body is material; but so also is it telluric. But, as we have no occasion to call it telluric, so neither need we call it material. The word, in its true sense, is mere surplusage in the science, and of no value whatever. As he is good enough to approve of the applications to which the terms matter, substance, and body *ought* to be restricted, I wish he could be induced to set the example of so restricting them, if only to a slight extent. He objects to the difficulty. But such a difficulty is like that of erecting a piece of machinery,—the useful work accomplished by which, when once it has been set up, transcends indefinitely the limited amount of labour expended, once for all, in erecting it.

4. In my slight remarks upon causes, I did not intend any special reference to Mr. Tilden's employment of the word. I would observe, however, upon his present use of the term, that the cause of which he now speaks is that which has very pertinently been termed the *occasional* cause. For instance, given certain conditions, *a*, *b*, *c*, *d*, all of which have been duly observed; then add

the reagent *e*, the result being a certain precipitate, he would regard *e* as the cause of this precipitation. Next, let *a*, *c*, *d*, *e*, be the conditions required, and all duly present, but let *b*, which represents the proper temperature, be wanting, then add *b*, and the same precipitation follows. In this second case, he would consider *b* as the cause. In other words, there could be, according to this view, two (or more) diverse causes of one and the same result. I say result, rather than effect, because the former term indicates sequence only, without any reference to causality; and in the illustration adduced, the totality of the conditions constitutes a set of co-causes, all contributing to, and converging upon one end, but no single one of which can properly be termed *the* cause. Whereas the cause to which I referred, and to which the co-relative term effect is the appropriate pendant, is the *efficient* cause (*causa causativa*). But any present reference to this cause would touch upon the great problem, which I have elsewhere styled (x), towards which all my utterances on these topics, whether moving upon it in direct lines, or revolving about it in orbits nearer or more remote, ultimately gravitate.

5. I am afraid that I must have failed to express my meaning clearly respecting the case of the presumed graphitic acid, and being but a laic in the science, I argue with diffidence any technical point with one of the clerus. Still, I must confess that I have not yet succeeded in appreciating the force of Mr. Tilden's objections. Assuming that there is such a body, whose correct formula is $C_{11}H_4O_5$, I ask, why should not this formula be as acceptable as such an one as $A_{12}B_4C_6$? The reply will probably be, because it violates the law of multiple proportions. To which I answer, that it may possibly be legalized by a clause of that very law, enacting and dealing with compound ratios. And if I rightly understand the nature of the objection taken, it is upon this point that issue is joined. Or am I to understand that the objection to this view would be, that the combining weight of the carbon comes out *proportionally* as 33 ($C_{2\frac{3}{4}}$), instead of *absolutely* as 132 (C_{11})?

6. In discussing Faraday's argument, I did not lay down anything whatever; it was sufficient for my purpose to refute his reasoning. The expression "atmosphere" was used in lieu of Faraday's "space," to denote the entire circumambient space pertaining to each several atom. But are we to understand Mr. Tilden as seriously admitting the possibility of empty space,—of a real vacuum? that there can be the room which something takes up, and yet nothing to take up that room?

7. In putting the question, "When a measure of air is condensed into one-tenth of its former bulk, what has become of the other nine volumes?" I think I am not too bold in saying that I have proposed a crucial problem, upon the solution, or the approximate solution, of which depends the next great step in advance of physics. I proportionately regret, therefore, that having adverted to it at all, Mr. Tilden has passed it over so slightly. But he will forgive me if I cannot consider him in earnest, when he speaks of heat as having constituted a portion of the missing nine volumes; that very heat which he himself defines as being a certain kind of movement, *i. e.* as being not a thing but a fact; heat, which is a certain condition of substance, but not itself substantial, filling space!*

8. I should regret to have dealt unfairly by a writer who himself deals so fairly with his subjects; but I really cannot see that I have exceeded the limits

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* Popularly speaking, heat is said to *fill* space; meaning no more than that it is diffused through it. We must remember that *to fill* is a verb causative, signifying to *make* to be full, and whatever makes or causes space to be full, must possess the property of extension, or, in other words, must *distend* space. Everything material subsists in *space*, and is acted upon in *time*; while forces exist in *time*, but act in *space*; a distinction which, as yet, is scarcely recognized. Substance, therefore, has *ex*-tension (in space); force has *in*-tension (in time).

of justice, especially as he himself admits a certain ambiguity of expression. As he very truly observes, many of these misunderstandings arise from the unfortunate use of the same word to signify both cause and effect.*

But I am still at a loss to understand in what sense he considers that heat, light, etc., are motion; whether by these terms he means the forces which produce the phenomena we call heat and light; or whether he means the phenomena themselves. As I understand the matter, the series runs thus,—1st, the agent or cause, A; 2nd, a certain movement produced by this agent, M; 3rd, certain phenomena which are the result of this movement, Ph. Now, which of the two, phenomenal heat (Ph) or causal heat (A), is it that Mr. Tilden affirms to be motion (M)? From his treatise in the last number, § 1, it would appear that he means causal heat. But to style this motion—*i.e.* to say that A is M—would be to affirm the species of the genus, the lower of the higher term. But in the paper now under notice, where he says, "the phenomena which we attribute to a something we usually call heat, are the effects of a particular kind of molecular movement," he appears to mean phenomenal heat.

In conclusion, Mr. Tilden thinks that the form of my objection to his position, that heat, light, etc., are motion, would be paralleled by such reasoning as red, yellow, and blue are colours; therefore, as those things which are equal to the same thing are equal to each other, red, yellow, and blue are the same. This would be true enough if I could have supposed a gentleman of his attainments to have meant by light and heat the sensible phenomena, popularly so termed. But I took for granted, as I think I had a right to do, that by those terms he meant the active agencies, the causes of the various phenomena.

AN APOLOGUE OF CORPOREAL AND COSMICAL INFINITY.

BY FRA: OLLÆ.—PART II. USQUE AD **.

"Sermons in Stones."

(*Continued from page* 638.)

My friend resumed his discourse as follows:—

"Since no man, as the ancients so justly moralized, can be pronounced fortunate till after his departure, it may be wiser for you to await the conclusion of the day before you decide that it is worthy of such commemoration. But, in a more commonplace sense than that of your allusion, for *you*, at any rate, the day will be marked by *A* stone,—the stone which has furnished the text of our discourse. But this, I must tell you, has, as yet, only got through its preliminary stage; since all that I have been saying this morning has only been intended as a preparation for, and by way of prelude to what I really desire to place before you. And if, when I have concluded, you shall not find yourself wearied, then you may, if you please, drop your white stone into the casket, which, when at the end of your course, you come to reckon them up, will be found to contain so few of that pure colour; for who among us is there that does not blackball the greater number of his days, which he yet thinks all too few?"

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* Unhappily, our English language is quite destitute of terminations to denote the difference—not so much between cause and effect as—between the act and the fact; the act of doing and the thing done; a distinction embodied in the Greek terminals *-sis* and *-ma*, and in the Latin *-tio* and *-tum*. Especially that large class of English nouns ending in *-tion*, almost all denote indiscriminately both the act and the fact. Thus, conception stands both for the act of conceiving, and for the thought conceived; motion for the act of moving, and the fact of movement, etc.

Not caring to remind my companion that what he was pleased to call *our* discourse was, in effect, a monologue, I begged him to proceed, and to deliver himself of all that was upon his mind, assuring him that I should continue to be an attentive and interested listener.

"Let me first ask you a question," he began. "We are, most of us, very ready to talk of the Infinite and of Infinity, though with a very faint comprehension of what we are talking about. Now, what is *your* conception of the infinity of creation?"

"That is a question very easily answered," I replied. "I conceive that every separate star is a complete solar system; that beyond those which appear to the naked eye, are myriads of telescopic stars; that beyond these, again, as in the nebulæ and in the galaxy, there are yet other and more numerous myriads, which, some day, may possibly be brought within human ken; and that yet beyond these,—sunk into still greater depths,—soaring to still greater heights in the realms of space, and spreading to infinitude on every hand, are myriads of myriads, which never, by any possibility, can be brought within the scope of human observation; that, in fact, the number of worlds is absolutely infinite."

"Very good," he nodded, "and this you suppose to be an adequate conception of cosmical infinity?"

"Is it not so then?" I inquired.

"You shall be your own judge," he returned. "You have given me your notion of *an* infinite universe, but what have you to allege against the possibility of an infinity of such infinite universes?"

"Truly nothing," said I, "either for or against such an imagination."

"But even this," he continued, "would not exhaust the possibilities of the case. And, since the utmost of whatever we can conceive to be possible must ever fall infinitely short of the actual, *i. e.* of that which is possible to omnipotence, you must admit that even the conception of an infinity of infinite universes still remains an inadequate conception of full infinity, as will be any, even the grandest, conception the mind of man can possibly form."

"Since I fall so far short of your expectation in my attempt to conceive the nature of infinity, you had better favour me with your own ideas on the subject," I remarked.

"That is precisely what I am about to do," he rejoined.

"Since, in the presence of Infinity," he proceeded, "there is neither great nor small, long nor short; and a moment is as a thousand years, and a thousand years but a moment; an atom as a world, and a world only an atom, who shall venture to say that the stone which I just now cast away, and whose interior we had been examining, is not a miniature universe, as complete and as thoroughly furnished as that which we are accustomed to call *our* universe; that the molecules which we saw in it are not true and actual solar systems,—its atoms, revolving globes, peopled—as we suppose *our* globes to be peopled—with intelligent beings, entire generations of whom shall have passed away during the minutes of *our* time that we were engaged in regarding it? In a few of *our* days or weeks,—æons of *their* time, it may, perhaps, be crushed to pieces beneath the heavy wheels of a waggon, or burned in a lime-kiln; and it,—one out of countless universes, be for ever destroyed.

"And if that stone may be such a universe, why not every fragment of stone, mineral, or rock, every grain of sand, every particle of substance? and this, not only on our native Earth; but, secondly, in every globe of our solar system; and not only in this our system; but, thirdly, in every globe, of every system, throughout our universe; comprehending in the term 'our universe,' all creation, as far as the utmost stretch of astronomical imagination has been able to realize it? this infinite universe of ours being, in comparison with a possible infinite universe, less than that one lentil-shaped granule which we observed in our stone, compared with the entire congeries of granules. Do you follow me?" he inquired.

"Pray proceed," said I; "for though I do not yet quite see your aim, what you say is sufficiently intelligible."

"Now, admitting," he went on, "that these terrestrial atoms may be worlds, among which may be some whose inhabitants geologize and pharmacize, take walks on well-made roads, pick up and sermonize on stones, why may not each wayside stone, every individual substance, in any or all of them be, again, other universes, embracing other worlds, where there are still other wayside stones, which, again, are universes; each one of these worlds,—systems,—universes,—being constituted and built up of interior atomic universes,—systems,—worlds,—and so on to infinity?"

"You quite take away my breath," I cried out, "with these intricate worlds within worlds, this life below life and within life. But do you mean me to regard all these supposititious worlds as finished and habitable?"

"By no means," he replied; "I would have you regard them as existing in every conceivable stage, from mere nebulous matter to the most highly finished world, whose inhabitants have arrived at a state of such perfect hygiene that pharmacy is no longer needed."

"And may I ask," I persisted, "what bearing the chemical and physical changes that are perpetually going on would have upon your—I cannot call it cosmo-gony, let me say—atomo-gony?"

"There is no reason," he returned, "why we should suppose that the resolution and re-composition of universes, or of portions of universes, is either less or more important before Infinity than, to us, is a mere chemical decomposition. Let us, therefore, suppose such a decomposition to be proceeding. The disruption and re-arrangement of molecules may then be equivalent to the destruction and re-creation of a world; if the decomposition be by solution,—then to a destruction by water; if by heat,—then to a destruction by fire."

"Will you return now to the point where I interrupted you," I suggested; "to the picture you were drawing of worlds within worlds?"

"Well, then," he continued, "let us now reverse that picture, and let me ask you if there is any inherent impossibility that this, which we call *our* universe, including countless systems, separated by distances that, to *us*, appear immeasurable,—united by times that, to *us*, are incomprehensible,—should be nothing more than the molecules and atoms in a wayside stone, or, suppose, in a lentil-seed, upon the Tellus of some enormous system of an enormous universe, contrasted with which our universe is smaller than a grain of sand compared with the sun? And why, again, may not this enormous universe itself be merely a pebble upon the Earth—of a system—of a universe, still more enormously Titanic; and so on, *ad infinitum?* worlds piled upon worlds,—system upon system,—universe upon universe,—dilating to infinity."

"Certainly there seems no reason," I gasped, "why all these things may not be possible to omnipotence; but it is surprising to me where you can pick up such strange ideas."

"When walking by myself in a thoughtful mood," he returned, "I can never refrain from ruminating over the infinite possibilities that surround us on every side; that every stone, each pebble in the road, every clod of earth in the fields, may be a several and complete universe; its stellar systems comprising atomic suns innumerable,—waited upon by satellites past counting,—peopled with sentient beings, to whom one of *our* days is a millennium of ages, *our* year an eternity; yet to whom *their* space appears as large, and time as long, as, to *us*, *our* space and time: worlds, which have lasted, perhaps, but a day, and yet are hoary with age; while, at the opposite extreme, are other worlds, which have endured for countless ages, and yet are only in their earliest infancy,—have not yet brought forth their first ichthyosaurus. And sometimes I amuse myself by fancying that this lentil-seed of an universe in which we live, may some day be caught up and eaten by an urchin, or go into a mess of pottage for an inhabitant, of some terrific epi-cosmos, of which it forms only a smallest constituent fragment."

"Your speculations about worlds within worlds," I here remarked, "remind me of a painting I saw some time ago at the house of a gentleman upon whom I had occasion to call. I was ushered into his library, where, between two book-cases, hung a painting, which immediately arrested my attention. It was the picture of an interior, on the back wall of which hung another picture (No. 2), which was also a picture of an interior, having on *its* back wall a picture (No. 3), which, again, depicted an interior, carrying a picture (No. 4); and so on, in perpetual regress, till the series of pictures within pictures stretched away, and vanished in the distance."

"I know to whom you refer," said my friend, "and I have heard of that painting, which is a very good illustration of our subject, in the *de*scending scale. But, to make it complete, a companion picture is required, which should exhibit a reversal of the process, by suggesting—if only it were possible to suggest—an *as*cending scale, in which each successive stage should comprehend the last, instead of, as in the case of our atomic series, being sub-included within it."

"I quite agree with you," said I.

"And now, do you not begin to perceive," he continued, "that we fall very short of the mark, when we speak of creation as being merely infinite? Already, we have two infinitudes; for wherever we make our stand-point,—whether upon the most enormous universe to which our imaginations can soar, there is still an infinity of ascending magnitudes above us;—or, whether upon the smallest atomic universe within universe, there is still an infinity of descent beneath us."

"But these two Infinities,—the infinitude of magnitudes eternally ascending,—the infinitude of parvitudes eternally descending,—oppressive as they are to the weak understanding of finite man, embody only half the problem: for these are still only the infinitudes of space. There are two other infinitudes, which are even more crushing,—the infinitude of the Time that *has been*,—the infinitude of the Time that *shall be*;—the eternity of the infinite restorations and destructions that have already been accomplished,—the eternity of the infinite dissolutions and re-creations that have yet to be fulfilled. Millions of times has system after system dissolved in ruins,—millions of times has each 'heard and obeyed the mandate of resurrection.' No sooner has the '*hic jacet*' of a defunct world been recorded, than its '*resurgam*' is already being written. In death, there is the germ of life; and in life, are already contained the seeds of dissolution. An infinite Penelopean tissue,—by parts, eternally weaving; by parts, eternally being unwoven: Creation pulsating throughout its infinite regions in an eternal systole and diastole of life and death."

"Will you be pleased to return to your subject," I here interrupted, "for we are fast approaching our destination."

"Oh! thou most matter-of-fact and sceptical of men," he retorted, "I will very soon bring my lucubrations to an end."

I hastened to assure him that I was far from wishing to abridge the conversation, and that I was quite as much interested as ever, but that our time was getting short.

"I shall still have abundance of time," he replied; "for I have nothing further to say, except to apply the 'finis' to the topic of Infinity."

"'The Infinite,' as usually conceived, is only the infinitude as of a plane; or, at most, is a mere multiplication of parts. Whereas, in order to rise to the full height of the subject, we require the infinitude, as of a sphere;—an infinite number of lines, radiating, in an infinitude of directions, from a common centre; which centre is the mind of each intelligent. For, infinity, properly apprehended, is, like space, of four dimensions; though also, like space, only three of these dimensions are ever called into requisition. 1st. There is the infinity of worlds eternally ascending in magnitude,—not merely as an infinitely progressive series, on one line; but, as an infinity of such series, on an infinity of lines: this gives the dimension of *height*. 2nd. There is the infinity of worlds eternally descending in magnitude, upon an infinity of divergent lines; this gives the dimension of *depth;* and these two dimensions, which are supplementary, each to the other, constitute the Infinitudes of Space. 3rd. The infinity of worlds above and worlds beneath have been an infinite number of times hurled into destruction,—an infinite number of times rebuilt out of their own ruins; this introduction of the element of Time gives to infinity its third dimension, viz. *length;* and these three dimensions, multiplied into each other, constitute what I will term *actual* infinity, as opposed to, 4th, *potential* infinity, which is the Time of the infinite number of destructions and re-creations which yet await the sound of the trump, and the opening of the seals;—the infinite asymptote, which, though eternally approaching completion, yet must remain for ever uncompleted. This last gives the dimension of *breadth*, which co-ordinates the potential infinity that *shall be*, with the actual infinity that *has been*—that *is;*—with MAN's infinity: but which, since it can never be applied to the other three dimensions, leaves CREATION's Infinity, though momently being accomplished, still eternally inchoate."

Here my companion paused.

"Pray proceed," said I.

"Nay!" he returned; "my task is now finished. But be pleased to remember, that in my share of our conversation (rather a lion's share, I thought to myself) I have sought to suggest matter for future thought,—to indicate, rather than even to outline, a subject which, by its nature, is illimitable. And, of course, you will not take everything quite *au pied de lettre*."

"The images you have called up before me, and the ideas you have suggested, have quite bewildered me," I answered him; "for, in the face of these infinities, the spirit of man collapses within him, and he is even more lost than one among an infinitude of atoms. But as we are now at our journey's end, I will say good-bye, till I meet you again at dinner; for it will take me some time to recover from the effects of the weird scenery you have conjured up before me."

I, accordingly, bade him adieu; and reaching home some two hours before dinner-time, determined, if possible, to bring back my perturbed mind into an every-day, common-place frame. To which end, after having washed off the dust of the road with a refreshing bath, I took down the last volume of the Pharmaceutical Journal, and addressed myself resolutely to its perusal.

N.B. The experiment proved perfectly successful.

P.S. Want of space, and respect for the patience of my readers, prevent my finishing here the record of this *dies memorabilis*. Wherefore, I stop at the 'USQUE AD.' Should there be any desire to follow the subject '*usque ad* MALA,' and to hear the conversation that, after our dinner, took place over the 'walnuts and wine,' the remainder of my notes will be available.

CHLORAL AN ANTIDOTE OF STRYCHNIA.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—I yesterday had an opportunity of testing the accuracy of the statement that chloral is an antidote of strychnine. A large spaniel bitch of mine picked up some bread-and-butter that had been prepared with Battle's killer for the destruction of mice, and ate an uncertain quantity of it. The servant who saw the dog eat it thought it of little consequence, and did not mention it to me, so that the first intimation I had of it was the dog's being seized with violent tetanic spasms, which first manifested themselves at 2.40 P.M. I at once attempted to administer an emetic of tartarized antimony, but succeeded in getting her to swallow not more than three grains, which had no immediate effect.

At 3.30, the dog apparently dying, it occurred to me to try chloral. A solution was prepared of one drachm of the hydrate in one ounce of water, and of this a teaspoonful was administered every few minutes when an opportunity presented itself. Doubtless not less than a third part was wasted, as the least excitement brought on a violent spasm. The odour of chloroform was soon apparent in the dog's breath, and a manifest improvement was simultaneously observed in the less rigid condition of the body generally.

After half an hour her state had so much improved that I considered her as good as cured. Such, however, was not the case, for the spasms soon after returned, but with mitigated severity. I therefore administered half a drachm more of the hydrate in the same manner as before, and with the same results. Two hours after the first dose of chloral all symptoms of tetanus had disappeared, the dog appearing a little drowsy and fatigued, but not sufficiently so to cause sleep. Notwithstanding that not less than one drachm of pure hydrate of chloral had been taken, she did not show the slightest tendency to coma. As soon as she was well enough to run about, the emetic took effect, relieving her stomach of a considerable quantity of half-digested food.

At 12 P.M. her pups were allowed to suckle, and, strange to say, no injurious results to them followed. I scarcely expected the poison would, by that time, have been so completely eliminated.

Of course, in sending you this, I do not imagine that my experience is of much scientific use, it being altogether out of line; yet this much can be said, that the account is entirely free from the unintentional exaggeration of the inventor, who so often sees what he wants to see, although no one else can.

THOMAS B. GROVES.

Weymouth, April 15th, 1870.

SO-CALLED CARBOLATE OF IODINE.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—In the 'Pharmaceutical Journal' of this month there are some observations by Walter G. Smith, M.B. Dub., upon "the so-called carbolate of iodine." As I am the only chemist in Ireland who makes this preparation, and advertises it, his remarks evidently apply to me. I wrote to him to give me an answer to the three following questions, but received only evasive replies:—

1st. Am I right in concluding it is to me you allude in that paper, although my name is not mentioned?

2nd. Where did you obtain "the so-called carbolate of iodine"?

3rd. Who is the individual that told you that I added ammonia to decolorize the tincture of iodine?

His first reply was, "If any error or inaccuracy can be pointed out in my analysis, the pages of the 'Pharmaceutical Journal' will, no doubt, be open to any correction or refutation of the statements made."

In my second letter, I stated I had received no replies to my questions (two of them).—

1st. Was I or not the individual alluded to?

2nd. Where did he obtain the article he analysed?

W. G. Smith's reply was, "Your demands were unreasonable and unjustifiable."

W. G. Smith, M.B., charges the unnamed individual with deception and fraudulent imposture, and shelters himself from an action for libel and slander, as he supposes, by not mentioning my name.

I then requested Mr. Tichborne, of the Apothecaries' Hall, to analyse my preparation. I give his report, which shows that my preparation, "the carbolate of iodine," is what its name purports it to be, viz. an improvement on the original American formula, only much stronger, (the original was so weak that it was useless). Mine is, 1½ part of the carbolate containing about 1 part of the tinct. iodi B. P., the iodine being combined with the carbolic acid, and not present as iodide of ammonium, as stated by W. G. Smith; nor did I ever state that iodine was free, as my label at foot will show.

"*Analysis of Carbolate of Iodine by Mr. Tichborne.*

"As you requested, I have 'submitted' your carbolate of iodine to a careful examination, and beg to place before you the following as the results:—

"It contained in the fluid ounce,—

Alcohol (calculated as rectified spirit, sp. gr. ·838) . .	175	grains.
Glycerine, about	22	,,
Iodide of Potassium	2·8	,,
Iodine (excess over that required by the potassium) . .	5·9	,,
Carbolic Acid, not determined.		

"The remainder consisted of rose-water. It also contained a minute trace of lime and phosphoric acid.

"The iodine was estimated by evaporating 10 c.c. of the tincture with pure soda, and fusing it when dry in a platinum crucible. The mass was then dissolved, neutralized with dilute nitric acid, and precipitated and weighed as iodide of silver. The potash was weighed as the platinum salt, and the alcohol was determined in the distillate obtained from 50 c.c. by taking the gravity.

"As regards the question put by you, namely, 'If it is made with iodide of ammonium?' I can positively state that the samples examined are not. When boiled with soda or lime, no indication of ammonia whatever was obtained.

"To accurately determine this point, 30 c.c. were distilled in a retort with an excess of soda; in this case about two-thirds of this liquid was drawn over. This distillate was carefully examined for ammonia. A slight indication was got with Nessler's test, but not greater than what would be obtained from ordinary distilled water. An attempt was then made to estimate the ammonia in a distillate obtained from a like quantity and in a similar manner, using a volumetric solution of oxalic acid, B. P. ·25 of a degree rendered the solution distinctly acid. (·25 of a degree would represent ·00402 of a grain of ammonia as being present in the fluid ounce.) It is therefore self-evident that iodide of ammonium does not enter into its composition.

"The amount of free hydriodic acid present is trivial (·12 of a grain to the ounce, it being determined by a decinormal solution of soda). It is therefore evident, from the analysis, that the iodine is mainly combined with the carbole acid; and, although the term 'carbolate of iodine' may not be regarded as correct from a chemical point of view, it is, perhaps, the best that can be applied, so as to convey to the profession its general composition and properties.

"CHAS. R. C. TICHBORNE.

"*12th April*, 1870."

The above report establishes the genuineness of my preparation, and puts W. G. Smith, M.B., into this predicament, that he either has exhibited, as an analytical chemist, ignorance and incompetency,—(for he has found a salt present which is not in it, and failed to detect other substances which are.)—or he has operated upon a spurious article: from either point of view his statements are very serious to me.

In conclusion, let me say it is not consonant with justice nor law, nor according to the moral principles of a well-regulated mind, to condemn any man as guilty of deception and fraudulent imposition without first giving him an opportunity of establishing his innocency or confessing his guilt.

I am, very respectfully yours,
JOHN EVANS, M.D., L.A.H.

49, *Dawson Street, Dublin*, 19*th April*, 1870.

A STUDENT'S OBSERVATIONS ON THE B.P.

BY JOSEPH YOUNG.

The following brief remarks will, it is hoped, be found seasonable, the more especially, as at a recent meeting of the Society to discuss the British Pharmacopœia, students were invited to express their opinions:—

Molecular Weights and Natural Orders.—Can any reasonable objection be urged against the insertion of the molecular weights of the chemical formulæ, and the botanical order of each official plant in future editions of the national Pharmacopœia?

Aloe, Aloës.—If the diæresis were to be placed over the last vowel (as observed only on p. 276) wherever the genitive occurs in the B.P., it would, at least, prevent the diphthong pronunciation, so often uttered by careless tongues; *e.g.* decoctum "alloze" compositum, "et hoc genus omne."

Quercus, Quercûs.—The circumflex accent indicating the genitive, is in this case also more conspicuous by its absence than otherwise, being found only on p. 268.

Alumen Exsiccatum.—Why may not the formula $NH_4Al(SO_4)_2$ be inserted for dried alum, as in the case of dried $FeSO_4$, Na_2CO_3, and $CuSO_4$?

Calx Chlorata.—Might not this compound be defined as a mixture of hypochlorite and chloride of calcium, $Ca\,2\,ClO, CaCl_2$ ($=Ca(ClO)Cl$), with a variable amount of chlorate and chloride of calcium, $Ca\,2\,ClO_3$ and $CaCl_2$?

Ferrum.—Of the nine official preparations in which "iron wire" is ordered, there is but one, where the size of the wire is specified, viz. vinum ferri. Is the size of less importance in other preparations, to wit, the mistura ferri aromatica, that a stated gauge is given in one form, and omitted in others?

With a proper definition on p. 140, this might be avoided, as:—*ferrum;* annealed iron wire, having a diameter about ·005 inch (= No. 35 wire-gauge), or "wrought iron nails free from oxide."

Cuprum.—The decimal equivalent to No. 25 wire-gauge = ·02 inch, might be conveniently inserted on p. 95.

Pilulæ.—In those formulæ where the weight of the excipient is not stated, the approximate quantity (found elsewhere in the B.P.) may be thus inserted:—

P. 236, line 16 from bottom,—Pilula cambogiæ composita, after "syrup" write—by weight 1 oz., or a sufficiency. On same page, line 4 from bottom,—Pil. colocynthidis composita, after "distilled water" insert, ½ a fluid oz., or a sufficiency. Page 239, line 7 from top, after "treacle" write—by weight 2 oz., or a sufficiency.

Pilula Saponis Composita.—The proportion of opium in the compound pill of soap seems to have been unnecessarily altered from the customary 1 part in 5, to—"1 part in 6 nearly."

If there should not exist any objection against the use of a potash soap, the following will be found an improvement on the official formula, since it not only yields a uniform mass, easy to roll, but what is of more consequence, one of unvarying strength:—

Take of Opium, in powder	of each 2 oz.
Liquorice Root, in fine powder	
Hard Soap, in powder	3½ „
Soft Soap	2½ „

Gradually beat the powders, previously mixed together, with the soft soap, until a uniform mass is obtained.

Pyroxylin.—Might not this be more euphoniously Latinized pyroxylinum? It would then correspond with similar terminations, as—digitalinum, glycerinum, iodum, etc.; and since gun-cotton no more enters into the preparation of collodium flexile, than gossypium does into that of collodium, the flexile variety ought to be erased from the preparations of Pyroxylinum as given on p. 267.

Syrupi.—The official instructions for the *completion* of most of these preparations seem to be unnecessarily diverse.

In eleven only of the seventeen syrups the final weight and specific gravity is to be noticed.

In one instance (syrupus rhamni) the specific gravity alone is given.

With syrupus aurantii, zingiberis, and ferri phosphatis, neither weight nor specific gravity is to be found. The two former, I am aware, cannot well vary, but that may not be said of the $Fe_3P_2O_8$ syrup, respecting which all that is stated is, that it should "measure twelve fluid ounces," but, if it should not, the deficiency must either be made up with distilled water, which is objectionable, or with diluted phosphoric acid, which would make the syrup unnecessarily acid.

In the formulæ for syrupus rhei and syrupus scillæ, we look in vain for any standard of comparison, to which loss by evaporation, etc. may be adjusted.

If uniformity be considered necessary, a definite measure for every syrup, as well as weight and specific gravity, would prove of great practical utility, and save the calculation which is now necessary.

Thus under syrupus we might read, the product should weigh 7½ lbs., measure 90 fluid oz., and have a specific gravity of 1·33.

Syrupus aurantii.—This syrup is not neary so delicious as it may be. The delicate flavour of the orange seems quite overpowered by the spirits of wine in the tincture.

The following process, which consists in using a tincture double the ordinary strength, yields a syrup nicer every way than that of the B.P. The extra cost of the "Peel" is more than defrayed by the reduction in the strength of the spirit, this being sp. gr. 0·935, or 13 per cent. "under proof," and quite strong enough to prevent the slightest change by fermentation:—

Tinctura Aurantii Fortior.
Strong Tincture of Orange-Peel.

Take of Bitter Orange-Peel, cut small and bruised . 4 oz.
Rectified Spirit . . . . 11 fluid oz.
Distilled Water . . . . 11½ „

Mix, and macerate for seven days, strain, press, and filter.

The product should measure 1 pint, which, when mixed with syrup in the B.P. proportion of 1 volume to 7, will yield a gallon of syrupus aurantii, much superior to that prepared in the usual way.

Volumetric Solutions.—As everything depends on these being of a known strength, some process whereby this could be ascertained might be advantageously inserted in the B.P. Take, for example, the volumetric solution of nitrate of silver; we might read that—

"200 grain measures, diluted with 1 or 2 fluid oz. of distilled water, slightly acidulated with hydrochloric acid, will yield a precipitate, which, when filtered, well washed, dried, and ignited, weighs 2·87 grains ($=AgCl$).

"The precipitate obtained from 20 cubic centimetres, treated in like manner, weighs 28·7 centigrammes." . . . .

Suitable directions for the titration of the remaining five official volumetric solutions would be more satisfactory to a conscientious operator, than the usual plan of trying a newly made solution with that of an opposite nature, which latter may be itself incorrect.

Corrections.—The following slight errors in the text of the B.P. have, so far as I am aware, hitherto escaped detection:—

Page 22, line 2 from bottom, for 2 grains, read—3 grains in each suppository.

Page 33, line 13 from top, for 1 part in 6, read—1 part in 6¼, nearly.

Page 36, after dose of ammonii chloridum insert—preparation in which chloride of ammonium is used, liquor hydrargyri perchloridi ½ grain in 1 fluid ounce.

Page 118, line 7 from top, after 2 parts in 3, write—nearly.

Page 137, after dose of ferri peroxidum hydratum, insert—preparation: emplastrum ferri, 1 part in 11.

Page 138, line 2 from bottom, insert—about 2 parts from 5.

Page 154, line 2 from bottom, after 1 part in 2, write—nearly.

Page 154, line 3 from bottom, opposite suppositoria hydrargyri, write—about 2½ grains in each, or 1 part in 6, nearly.

Page 154, last line, after 1 part in 4½, write—nearly.

Page 166, line 14 from top, after 1 part in 6, write—nearly.

Page 166, line 15 from top, for 1 part in 16½, read—1 part in 23½, nearly.

Page 230, line 5 from bottom, for 1 part in 16½, read—1 part in 23½, nearly.

Page 231, below pulvis opii compositus, insert—suppositoria plumbi composita, 1 grain in each suppository, or 1 part in 15.

Page 231, after trochisci, between "⅒ grain," and "in each" insert—of extract.

Page 243, line 19 from top, for 36 parts in 48, read—3 parts in 4.

Page 243, line 20 from top, for 6 parts in 30, read—3 grains in each, or 1 part in 5.

Page 256, after pilula colocynthidis et hyoscyami, insert—pilula ipecacuanhæ cum scilla, 1 part in 3, nearly.

Page 256, line 3 from bottom, opposite pilula colocynthidis composita, write—1 part in 24, nearly.

Page 280, line 11 from top, for 1¼ ounces to 6 ounces, read—1 part in 5.

Page 280, line 10 from top, after 1 part in 7, write—nearly.

Page 309, among the preparations of syrup, insert—confectio opii, and confectio scammonii.

Page 376, line 11 from bottom, after 1 part in 6¼ write—nearly.

NOTES AND ABSTRACTS IN CHEMISTRY AND PHARMACY.

A New Chloral.

Dr. Hofmann, who was present at the last meeting of the Chemical Society, related some interesting facts connected with the manufacture of chloral in Berlin.

It appears that in many of the German distilleries the crude spirit is purified by filtration through a deep bed of charcoal. In consequence of the adoption of this method a considerable quantity of aldehyd is generated in the spirit; and in these distilleries a certain portion of the produce is so far contaminated with this substance as to be unfit for any of the uses of spirit of wine. Since the manufacture of chloral has become a matter of so much importance (Dr. Hofmann states that one maker in Berlin is producing a hundred pounds per day), it appeared likely that this spirit, containing aldehyd, would find an economic application. The formula of chloral indicates that it is the chlorine derivative of aldehyd, and the first action of chlorine upon alcohol is to remove two atoms of hydrogen, liberating aldehyd, which, by a substitution change, is then converted into chloral:—

$$\underset{\text{Alcohol.}}{C_2H_6O}+Cl_2=\underset{\text{Aldehyd.}}{C_2H_4O}+2HCl.$$

$$\underset{\text{Aldehyd.}}{C_2H_4O}+Cl_6=\underset{\text{Chloral.}}{C_2HCl_3O}+3HCl.$$

The presence of aldehyd in alcohol ought, therefore, to be no detriment to its use in the preparation of chloral. Nevertheless, it was found that the product obtained from this spirit differed in some respects from the ordinary chloral. Analysis proved that it contained a distinct substance.

It has been shown that when aldehyd is subjected to the action of hydrochloric acid gas, two molecules of it are deprived of the elements of water, and crotonic aldehyd results:—

$$2(C_2H_4O)-H_2O=C_4H_6O.$$

The hydrochloric acid resulting from the first part of the action therefore attacked the free aldehyd, and produced this change. By the further action of chlorine upon this crotonic aldehyd a chlorine derivative was obtained, having the composition $C_4H_3Cl_3O$. Whether this body possesses the same medicinal properties as the ordinary chloral has not been determined.

New Process for the Preparation of Hydrobromic Acid.

The process is founded upon the action of bromine upon paraffin. Bromine in vapour is passed into melted paraffin, contained in a tubulated retort; part of the bromine replaces hydrogen in the paraffin, whilst another portion escapes in the form of hydrobromic acid. The product resulting from the action of the bromine decomposes towards 180° C., disengaging, in the form of hydrobromic acid, the greater part of the combined bromine. The residue is a carbonaceous mass, which retains 31·6 per cent. of its weight of bromine. The solution of hydrobromic acid thus obtained, saturated at 0°, has the density 1·78. It corresponds to the formula $HBrH_2O$.—*Champion and Pellett* (*Comptes Rendus, March* 21).

Process for the Estimation of the Alkaloids in Cinchona Barks.

The following process is recommended by Dr. Vogl ('Neues Jahrbuch für Pharmacie,' Jan. 1870) as a rapid and easy method of estimating the valuable constituents of the cinchona barks. Results obtained by this process, compared with others of the established methods, show favourably for the former. The bark is to be finely powdered, and mixed with quicklime. 100 grains of bark to 250 of lime form a convenient quantity to operate upon; the mixture is damped with water, and then dried. The dry mass is then thoroughly exhausted with boiling 90 per cent. alcohol, and the solution filtered. To the filtered liquid a little dilute sulphuric acid is added, and the precipitated sulphate of lime filtered off; the greater part of the spirit may be distilled or evaporated away, and then evaporated nearly to dryness by the aid of a water-bath. A little water is added, the liquid filtered, and caustic soda added. The white precipitate of the alkaloids thus obtained, is collected in a weighed filter, dried thoroughly, and then weighed.

To separate the bases from each other, the precipitate is digested in a flask with ether, the ethereal solution decanted, and the residue washed with ether. The ethereal solution, united with the washings, is evaporated to dryness, and dissolved in a dilute sulphuric acid of known strength; the solution, if necessary, is filtered and precipitated with a titrated solution of soda, in quantity sufficient to neutralize the sulphuric acid added. The residual alkaloid, insoluble in the ether, is treated in the same manner. The bases procured are in a state of considerable purity.

CHAPTERS FOR STUDENTS.

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HEAT (*continued*).

13. For the measurement of temperatures within moderate limits (from about — 30° to 600° F.), the mercurial thermometer is by far the best. Spirit of wine is employed to charge the thermometer when the temperatures to be observed are very low, alcohol never solidifying at any temperature hitherto producible. The expansion of air or other gas is made the measure of very high temperatures. But mercury presents peculiar advantages, one of which is that it does not adhere to the tube; another, that it gives its indications quickly. This is chiefly dependent upon the fact, that it has a low "specific heat."

14. To understand the meaning of this phrase, such experiments as the following must be carefully thought over.

a. If equal weights of water and mercury are successively placed over the same lamp, and the time occupied by each in passing from the temperature of the air (say 50° F.) to some higher point (say 150° F.) noted, it will be found that the mercury acquires that temperature in about $\frac{1}{30}$ of the time occupied by the water.

b. If the mercury and water are now allowed to cool down again to the starting-point, being both deposited in some place where they may be subjected to exactly the same external influences, the mercury will cool down again in about $\frac{1}{30}$ of the time occupied by the water.

c. If water at 150°, and mercury at 50°,—equal weights,—be shaken up together till the temperature of the two is the same, it will be found that they both indicate by the thermometer between 146° and 147°; the water will have lost about 3·2°, and the mercury will have gained about 96°, or 30 times 3·2.

If water had been substituted for mercury in the last experiment, the temperature of the mixture would, of course, have been halfway between the two, or 100°.

15. Such experiments as those just described, tell us, that to make the temperature of water rise or fall through the same number of degrees on a thermometric scale, it requires the addition or subtraction of thirty times as much heat as is required to effect the same change in an equal weight of mercury; or conversely, the mercury requires $\frac{1}{30}$th of the heat necessary for the water. The numerical expression of this fact would give us, making water = 1, mercury = ·033. These numbers are their respective specific heats. Nothing as to absolute amount or quantity of heat is to be inferred from the use of these numbers; they merely indicate the relative powers of the two bodies of, as it were, assimilating heat.

16. The specific heat of a body is ascertained by one or other of several methods.

a. By the process of mixture above described, in connection with the example of water and mercury.

b. By observing the different degrees of rapidity with which weighed quantities cool down from some chosen temperature to a lower one.

c. By ascertaining the relative quantities of ice melted when equal weights of the bodies experimented upon are allowed to yield their heat to it in falling from the chosen temperature to 32° F.

17. In experimenting upon the different elementary bodies, an interesting fact comes to light. It is found that the greater the atomic weight of an element, the smaller is its specific heat, and *vice versâ;* they are inversely proportional to each other. The consequence is, that if the specific heats of the elements be multiplied by their atomic weights, we get a series of products which are very nearly the same. For example, the atomic weight of potassium is 39·1, its specific heat ·1695, and the product of these two numbers is 6·5. The atomic weight of sodium is 23, its specific heat ·2934, and the product of the two is 6·748.*

18. It follows from what has just been said, that the atoms of all elementary bodies have associated with them the same amount of heat.

CHEMICAL NOTES TO THE PHARMACOPŒIA (*continued*).

The former of these two observations is merely a reiteration of the law of multiple proportions. If hydrogen combines with a fixed quantity of another element, it can only do so at the rate of 1 gram at a time; chlorine in the same way can unite with other bodies only in parcels of 35½ grams at a time. It follows, then, that the measures of different elements which combine must be the measures which contain these weights, viz., once, twice, or more times 11⅕ litres.

To understand the second statement, it is only necessary to think of a definition for specific gravity. The specific gravities of any number of substances may be said to be the comparative weights of equal volumes of those substances. Now, 1, 35·5, 16, 80, and 127 are the respective weights of one and the same measure of the gases enumerated, so that these numbers stand for the specific gravities of the same, one amongst them, hydrogen, being set up as the unit for comparison.

Thus far, the symbols have been taken to represent a certain number of grams of each of the different elements; but for the gram any other unit of weight may be substituted. Thus, H may be used to express 1 grain or 1 pound of hydrogen; in such case, Cl will stand for 35½ grains or pounds, O for 16 grains or pounds, and similarly with the rest of the elements.

The quantities actually employed in an experiment may be one-half or a quarter, or any other fraction of 16 grams of oxygen, or of 32 grams of sulphur; but the point to remember is, that the proportion between them must be preserved. To illustrate this. Suppose we wanted one-tenth of the Pharmacopœial quantity of any official preparation, for example, of pulvis antimonialis, we should take one-tenth of the prescribed quantity of each ingredient, that is, one-tenth of an ounce of oxide of antimony, and one-fifth of an ounce of phosphate of lime. The proportion of the one ingredient to the other would be the same as usual, viz. 1 to 2, though the quantities really used would be different.

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* See a paper by the Author, Pharm. Journ, N.S. Vol. IX. p. 532.

The proportions of the elements which are found to combine together in this unalterable manner are usually called the "atomic" * weights of the elements.

The standard atoms possessing the absolute weight and volume adopted in these notes are the most easily applicable to purposes of calculation, and numerous examples of their utility will be found further on.

The *Atomic Theory* was invented to explain the known laws of chemical combination. According to the atomic theory, all bodies are constituted of little particles, or atoms, so excessively small as to elude all attempts to see or examine them separately from each other. According to the theory, all the atoms of any one element are like each other, but different from those of any other element. Thus, for example, all the atoms of sulphur are supposed of the same size and weight, and all the atoms of hydrogen are of the same size and weight, but those of sulphur are 32 times heavier than those of hydrogen. When in chemistry we say that elements, or compound bodies, are built up of atoms, it is not intended by this to imply that the atoms are really and truly indivisible in the absolute sense of the word. We only suppose each atom to be a certain small mass which is never broken or divided by making it combine with other atoms, but we do not know whether it is itself constituted of smaller particles or not. Indeed, in chemistry, the term "atom" has gradually acquired a modified signification; it is usually now taken to mean any one of the constituents of a compound which is capable of retaining, under certain conditions, a certain degree of independence,—so that it is actually often applied in connection with bodies which, instead of being simple, are composed of more than one elementary atom.

When any two symbols are placed side by side, this juxtaposition shows that the elements they represent are chemically combined together. For instance, H_2O, HCl, NH_3, C_2H_6O are respectively the "formulæ" of the chemical compounds water, hydrochloric acid, ammonia, and alcohol. The formulæ of compounds have a meaning analogous to that of the elementary symbols. They represent certain fixed weights, which are simply the sum of the weights represented by the symbols separately.

H_2O stands for $(2+16=)$ 18 grains of water.
HCl stands for $(1+35{\cdot}5=)$ 36·5 grains of hydrochloric acid.
NH_3 stands for $(14+3=)$ 17 grains of ammonia.
C_2H_6O stands for $(12\times2+6+16=)$ 46 grains of alcohol.

Moreover, the weights of all compounds represented by such formulæ, when converted into vapour, brought to the same temperature, and measured under the same pressure,† are again found to occupy the same cubic space. This space is double of that which has been given as the volume of the gram-atoms of the elements. Accordingly,—

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* Atom, that which cannot be cut; from ἀ and τέμνω. A list of atomic weights will be found at the end of the British Pharmacopœia, 1867.

† The temperature and atmospheric pressure at which such measurements are made are expressed by 0° C. and 760 millimetres (29·92 inches) of mercury in the barometer.

H_2O represents 18 grams, or 22·4 litres of water in vapour.
HCl represents 36·5 grams, or 22·4 litres of hydrochloric acid.
NH_3 represents 17 grams, or 22·4 litres of ammonia.
C_2H_6O represents 46 grams, or 22·4 litres of alcohol in vapour.

That weight of a chemical compound which thus, when in the gaseous state, fills 22·4 litres, is called shortly its *molecule*.

The molecule of water is expressed by the formula H_2O; it is formed by combining 2 atoms of hydrogen, each weighing 1 and measuring 1 unit of volume (*i. e.* 11·2 litres) with 1 atom of oxygen, weighing 16 and measuring 1 volume. Before combination, the 2 volumes of hydrogen and 1 of oxygen together make 3 volumes, but in combining they contract into 2 volumes. This contraction of volume occurs in the majority of cases of gaseous combination.

There are reasons for supposing that the atoms, even in elementary substances, are not altogether isolated and independent of each other, like the bricks in a wall, each being surrounded on all sides by mortar, but are united to each other in pairs, thus forming molecules. Then, since each atom fills 11·2 litres, the space occupied by the molecule formed of 2 atoms is 22·4 litres. According to this system, all substances, elements as well as compounds, are reduced to the same standards of measurement. The formulæ of the elements in their ordinary uncombined condition are, then, O_2, H_2, Cl_2, Br_2, I_2, etc.

Symbols and formulæ are employed to show the changes which are brought about by letting different bodies act on each other, as in the following examples.

Hydrochloric acid may be formed by combining hydrogen and chlorine gases:—

$$H_2+Cl_2=2HCl.$$

This equation shows that one molecule of hydrogen and one molecule of chlorine give two molecules of hydrochloric acid.

Hydrochloric acid may also be made by acting upon common salt with sulphuric acid:—

$$2NaCl+H_2SO_4=Na_2SO_4+2HCl.$$

Two molecules of chloride of sodium, and one molecule of sulphuric acid, produce one molecule of sulphate of sodium and two molecules of hydrochloric acid.

Oxide of silver is made by decomposing nitrate of silver with lime (oxide of calcium):—

$$2AgNO_3+CaO=Ag_2O+Ca2NO_3.$$

Two molecules of nitrate of silver, and one molecule of oxide of calcium, give one molecule of oxide of silver and one molecule of nitrate of calcium.

In the last equation, the two atoms of silver in the nitrate exchange places with the one atom of calcium in the lime. The two silver atoms are, therefore, equivalent to the one calcium atom. Recollecting that the composition of water is represented by the formula H_2O, and comparing this with the formula of lime, CaO, and that of oxide of silver, Ag_2O, we find that H_2 is equivalent either to Ca or to Ag_2. Two atoms of silver are therefore equivalent to two atoms of hydrogen, or one atom to one atom. Hydrogen being, as usual, taken as the standard for comparison, we say that Ag is *univalent*, or, in other words, that each atom of it has the same combining or replacing value as one atom of hydrogen. Calcium, for similar reasons, is *bivalent*.

In the last equation, it will be seen that the group of symbols NO_3 is on the left-hand side combined with Ag, whilst on the right-hand side $2NO_3$ is combined with the Ca. This tells us that the group NO_3 possesses a univalent character, like silver and hydrogen. In the first equation, we see that the group SO_4 is united with H_2 on the one side, and with Na_2 on the other. This tells us that Na is another univalent atom, and that SO_4 is bivalent.

We may speak sometimes of one atom or two atoms of NO_2 or of SO_4, and these are examples of what was meant when it was said, in a former paragraph, that the term atom was advantageously extended even to compounds, provided they remain entire or undecompounded in passing from one state of union to another.

The various constituent atoms, whether elementary or compound, forming compound bodies, are frequently termed "radicles." Radicles are univalent, bivalent, trivalent, quadrivalent, quinquivalent, or sexivalent. Examples will occur frequently in studying the Pharmacopœial chemistry, to which we now proceed.

CASES OF POISONING—ACCIDENTAL AND CRIMINAL.

Deaths from Narcotic Posion.—On Wednesday, December 22, an inquest was held at Mile End, respecting the death of a child three weeks old. According to the evidence of the mother, the child was ill and sleepless, and a sleeping draught was obtained from a chemist, the mother gave the draught to the child who went to sleep and never woke again. A surgeon stated that the child died from congestion of the brain, accelerated from an overdose of narcotic poison, and the jury returned a verdict to that effect.

On the previous day an inquest was held at Warrington, before Mr. C. E. Driffield, respecting the death of an infant, Catherine Ward, ten weeks old. It appeared that the child had a cough, and the mother took it to the shop of a druggist, whose assistant sold her something in a bottle, desiring her to give the child twelve drops, three or four times a day. She gave it the whole of the medicine, and the child died. The coroner said that he could not help thinking that poor people had no idea of what a drop was. It was surprising that druggists had no better sense than to give medicine containing poisons to be administered in drops. It was quite possible that an overdose had been given to the child. The jury returned an open verdict.

[Had the coroner been better acquainted with the practice of the medical profession, with reference to ordering medicine to be taken in drops, he would probably have been rather less sweeping in his censure of the druggist in this case.]

An inquest was held at Wigan, on the same day; this case was also that of a child aged four years. A week previously the child was taken ill, and her parents went to a herbalist, named Daniel Flight, and obtained some medicine. Several doses were given to the child, which did not improve, and Mr. White, a surgeon, was called in, but too late to save the child's life.

J. Campbell Brown, B.Sc., of Liverpool, made an analysis of the medicine, and he found it contained 0·35 per cent. of opium, or 1½ grains to the fluid ounce. Mr. White considered the treatment to be improper, as a powder given to the deceased contained 2 grains of gamboge, more than should be given to an adult under ordinary circumstances. The coroner sent for Flight, but it was found that he had left the town. The jury returned a verdict that the deceased died from exhaustion and debility; and expressed their opinion that the medicine supplied by Flight was dangerous and improper to be given, except under the advice of a properly qualified medical man.

An inquest was held, January 14, on the body of a man named Dillon, who had been poisoned by taking an overdose of opium. He had complained of being unable to sleep, and it was found that he had taken sufficient opium to kill several persons.

Suicide by Chloride of Zinc.—An inquest was held on Saturday, January 1st, by Dr. Lankester, at Holloway, on the body of Mrs. Philips, aged 46, who died at her residence in Loraine Road from the effects of poison. It appeared that Mrs. Philips had been much depressed from family bereavement, and that on the previous Wednesday she sent her servant for Mr. Moxon, surgeon, observing that she was very bad. Mr.

Moxon arrived, and remained with Mrs. Philips for three hours. She died the following morning. Mr. Moxon wrote to the Coroner to the effect that an old and valued friend had died of poison, and that, as he was medical attendant, as well as residuary legatee to the property by the will of the deceased, he had asked Mr. Kesteven to make a *post-mortem* examination. He admitted in evidence that he had thrown the bottle, with the remainder of the "Burnett's disinfecting fluid," with which Mrs. Philips had poisoned herself, into the street, "because he did not want what she had done to be known," and that, seeing the impropriety of this, he had sent for the fragments of the bottle, which were collected and brought in. Mr. Kesteven deposed that death had been caused by chloride of zinc. The verdict of the jury was in accordance with the summing-up,—"Suicide whilst in an unsound state of mind."

Accidental Poisoning by Prussic Acid.—On Wednesday, January 5th, an inquest was held at the 'College Arms,' Crowndale Road, St. Pancras, on the body of James Gandy, forty years of age, who had accidentally poisoned himself by drinking during the night the whole of his medicine, containing thirty-six drops of prussic acid. It appeared that deceased was sent from the infirmary to the male infirm ward on the 19th of December, suffering from consumption. Complaining of sickness and diarrhœa, Dr. Hill, the medical officer of the workhouse, made him up some medicine containing thirty-six drops of prussic acid, and ordered a dose, containing three drops, three times per day. A dose was administered at eight in the evening of the 31st of December, by the day nurse, who then left the inmate in charge of the night wardsman. The next morning it was discovered that during the night he had drunk the whole of his medicine, and his account was that he took it to allay his thirst, although he had toast-and-water and lemonade by the side of his bed. It was suggested that the ingredients in the medicine might have given him relief, and that his diseased state might have blinded him to the fact that he was taking poison. It was further suggested that it would be advisable to discontinue the practice prevalent in workhouses and hospitals of leaving medicines within reach of the patients. Medical evidence having been given to show that the deceased was treated in the customary manner, the jury returned a verdict of "Died from accidentally taking an overdose of prussic acid."

Poisoning by Bichloride of Mercury.—On Tuesday, February 8th, an inquest was held at Liverpool on the body of a man named M'Dowell, aged 20. He had suffered from a skin disease, and had obtained a French specific, which was ordered to be mixed with water and used as a bath. Instead of using it in this manner, he applied it to his body just as he received it. The poison was rapidly absorbed, and death resulted. The preparation proved to be a strong solution of perchloride of mercury.

Accidental Poisoning by Opium.—An inquest was held by Dr. Lankester at Camden Town on the body of George Stapleton, who was poisoned, the day after his admission to the St. Pancras infirmary, by the administration of a dose of castor oil and opium, intended for another patient. It appeared that he was found in a very exhausted state, suffering from congestion of the lungs. He was taken to the infirmary, and was prescribed for. Dr. Ellis, the medical officer, stated that he found the deceased was dying, and upon inquiry ascertained that a dose of castor oil and opium had been given him by mistake. He rapidly sank, and died from the effects of the dose. The jury delivered the following verdict, "That George Stapleton died from a dose of castor oil and opium given him by mistake while suffering from congestion of the lungs, and that they consider there was great carelessness in the sending and administration of the said medicine."

Poisoning by Aconite.—A case is recorded in the 'British Medical Journal' in which a woman, swallowed half an ounce of liniment by mistake for castor oil. The dose contained 1½ drachm of tincture of aconite root and 1 drachm of chloroform. She did not vomit for about three hours, and then, after an emetic, she recovered, and it is suggested that the chloroform may have acted as an antidote to the aconite.

Poisoning by Laudanum in Mistake for Godfrey's Cordial.—An inquest was held at Hemyock on the body of a child who died from the effects of laudanum. The child, about two months old, was ill, and the mother sent her husband to the shop kept by a Mrs. Wide, for some child's cordial. It appeared that laudanum was kept in a bottle similar to that containing the cordial. The cordial-bottle had been broken, but this fact having been forgotten, Mrs. Wide took the laudanum bottle by mistake,—both bottles having been marked "poison." The jury returned a verdict in accordance with the facts.

Suicide by "Battle's Vermin Killer."—An inquest was held, at Elton, on the body of Reuben Eayres, who was found dead, with the remains of a tart lying by his side, and a paper with the following words in the deceased's handwriting, "Died by poison." The case is reported in the 'Northampton Mercury,' in which the following curious statement occurs:—"An analysis of the tart disclosed the fact that a portion of Battle's Vermin Killer had been put upon it. One of the component parts of that poison, it was stated, is *nux vomica*, which Mr. Southam, surgeon, considered was the cause of death, there being no contortion apparent as in the case of strychnia." A verdict of *felo de se* was returned.

Accidental Poisoning by Strychnia.—An inquest has been held at Wigan on the body of a man who was accidentally poisoned with strychnia. The explanation of the surgeon who dispensed the medicine was to the effect, that he was not aware that there was any strychnia in a crystalline form in his surgery, and the bottle containing the poison was not properly labelled. The verdict of the jury attributed death to censurable oversight on the part of the surgeon, and they attached great blame to those who placed the bottle in its position without a label.

Accidental Poisoning by Chloride of Zinc.—At a dinner given by a Calcutta judge several gentlemen of position were nearly poisoned; a servant handed round chloride of zinc in place of liqueur. Mr. Graham, Government Standing Counsel at Calcutta, drank off a glass and immediately fell. Remedial measures were adopted, and the unfortunate gentleman is out of danger; but, it is said, it will be years before he is fully restored.

Suicide by Prussic Acid.—An inquest was held by Mr. Carter, the coroner for East Surrey, in Lambeth, on the body of Mr. Augustus Reeve, who died from the effects of prussic acid in the Albany Baths. He had requested to have a private bath, with the water at 100° F. The bath-attendant, hearing a noise, opened the door, and found the deceased vomiting. Medical assistance was called in, but death took place almost immediately. A bottle, labelled "poison," was found, which had evidently contained "Scheele's hydrocyanic acid," and this, according to the medical evidence, was the cause of death. From the evidence of Mr. F. Brand, of Richmond, brother-in-law of the deceased, Mr. Reeve had formerly practised as a surgeon, but in July last had received a severe sunstroke, since which he had been very low-spirited. The jury returned a verdict of "Suicide while in a state of temporary derangement."

Accidental Poisoning by Opium.—An inquest was held at Bristol, April 9th, on the body of Mrs. Frances Mary Goyder, whose death was caused by an overdose of Battley's solution of opium. By the advice of her brother-in-law, Dr. Goyder, of Bradford, she had taken a few drops of Battley's sedative with great benefit, and on Thursday morning, after passing a sleepless night, she took an overdose of the mixture, and although every effort was made to restore her, she died from the effects of the poison the following day. The evidence entirely negatived the idea of suicide. The jury accordingly returned a verdict of "Died from an overdose of Battley's solution of opium, taken by mistake."

MISCELLANEA.

Assault upon a Chemist at Hull.—The facts of the case were as follows:—George Taylor went into the shop of Mr. Bell, and complained that the latter had been the means of his being struck off the register of chemists and druggists. Mr. Bell, who is the Secretary of the Chemists and Druggists' Association, told him that he had nothing to do with his name being struck off the register. Taylor then struck Mr. Bell in the face with a stick, and escaped out of the shop. Application was made for a warrant, which was granted, upon which the defendant was fined £3 and costs.

Penalty for Substitution.—A Paris *pharmacien* was lately called upon to supply a bottle of "Seguin's cinchona wine," which had been ordered for a patient by his physician. He, instead, gave a bottle of the cinchona wine of the French *Codex*, labelled as Seguin's. For this substitution he has been condemned by the Correctional Tribunal of the Seine to a fine of 100 *francs* with costs, or imprisonment for forty days, and to have the judgment placarded on his own door and those of the nine other *pharmaciens* resident in his *arrondissement*.—*British Medical Journal.*

Caustic Arrows.—These little arrows, used by M. Maisonneuve, of Paris, are composed of one part of chloride of zinc with one or two parts of flour, triangular in shape, two inches and a quarter long, and one-eighth in thickness. When hard, these arrows are passed into tumours through little incisions, made with the scalpel, deeply enough to make them disappear from sight. The tumours thus treated are dressed with dry lint, changed daily. It is said that no pain is experienced after the first four or six hours.—*Medical Press and Gazette, April 20th.*

Method of Staining White Woods. (M. Mène.)—When naturally white-coloured woods are painted over with a concentrated aqueous solution of permanganate of potash, which is best kept somewhat warm (tepid), it is possible thereby to give such woods the appearance of palissander or walnut-wood. Different kinds of wood behave with this solution in different manners; the wood of pear and cherry trees is rapidly stained; white woods, as, for instance, the acacia (*Robinia pseudo-acacia*), resists a longer time; and resinous woods, like fir, are more difficultly acted on. The *rationale* is that the permanganate of potash is decomposed by the woody fibre; brown peroxide of manganese is precipitated and fixed by the potash, which is afterwards removed by washing with water. The wood, after having become dry, is varnished, and is, according to the author, not readily distinguished from naturally dark-coloured woods.—*Chemical News.*

The Bleaching of Almond Oil.—The following process is suggested by Mr. E. B. Shuttleworth, in the 'Canadian Pharmaceutical Journal:'—"Dissolve one grain of permanganate of potash in 20 ounces of cold water; agitate with an equal bulk of the oil; separate by means of a funnel and wash with water. If the colour is not entirely removed, repeat the process with fresh solution; filter through paper if necessary."

Chloral.—The Paris correspondent of the 'Medical Times and Gazette' states as the result of M. Bouchut's communication to the Académie des Sciences, that the contradictory results obtained by different experiments may be imputed to impurity of the agent. M. Bouchut says that it should be employed in the state of solid hydrate; and he considers it to be a powerful sedative to the motor and sensitive nervous system. The dose should not exceed 5 grammes for adults and 1½ for children; it may be administered by the mouth, but its effects are more prompt when given by the rectum. Injected hypodermically, it gives rise to formidable eschars. The urine during the sleep induced by chloral is neutral, and when boiled with Fehling's liquor, it does not reduce the salts of copper; but twenty-four hours after awakening, when it contains chloral, it is more dense, and reduces the salts of copper.

M. Personne, who is also engaged in investigating the properties of chloral, contradicts this latter statement, and maintains that chloral is never met with in the urine; and with reference to the reduction of the cupro-potassic liquid, observes "It should be known that, in consequence of the urates which it contains, urine will always reduce the copper, providing the ebullition is continued long enough."

Mr. Squire, in a letter to the editor of the 'Medical Press and Circular,' on the administration of chloral hydrate, observes that peppermint water is the best vehicle for chloral, which, with a little simple syrup, covers its peculiar taste most effectually.

A Cement for Iron and Stone.—The following is recommended as a valuable cement in 'The Medical and Surgical Reporter.' Glycerine is made into a paste with litharge: as the material hardens very quickly, it must be used at once. The litharge should not be very dry; that which has absorbed a considerable amount of moisture forming a better cement.

THE SALE OF POISONS IN IRELAND.

In the House of Commons, on Friday, April 1, Mr. Agar-Ellis asked the Solicitor-General for Ireland whether there was any law in Ireland for the prevention of the unlimited sale of poison; and, if not, whether it was the intention of the Government to bring in a measure for that purpose.

The Solicitor-General for Ireland, in reply, stated that there was an Act of Parliament at present in force in Ireland regulating the sale of arsenic. The provisions of the Pharmacy Acts, however, of 1862, 1868, and 1869, which imposed limitations on the sale of poisons generally, did not extend to Ireland, and he saw no good reason why they should not. He hoped before long to be able to lay on the table a measure on the subject.—*Medical Times and Gazette*, April 9, 1870.

Obituary.

We regret to announce the death of Mr. Charles Titcomb Blake, of 47, Piccadilly, which occurred on the 31st of March, at the age of fifty-two, after a long illness. He was the son, and successor in business, of the late Alexander Blake, one of the Founders of the Pharmaceutical Society, and was himself one of the earliest Associates, and a Member of the Institution from 1843.

BENEVOLENT FUND.

SUBSCRIPTIONS AND DONATIONS RECEIVED DURING THE YEAR 1870.

LONDON.

	£	*s.*	*d.*
Allchin, Alfred, Richmond Rd., Barnsbury, N.	0	10	6
Andrews, F., Leinster Ter., Hyde Park	0	10	6
Applegate, E., 6, Hercules Terrace, Upper Holloway	0	10	6
Attwood, A., 61, Cannon Street, E.C.	1	1	0
A. M.	3	3	0
Bacon, John Turner, 21, Moorgate St. (per Mr. Mould)	1	1	0
Balch, E., 14, Claremont Pl., Brixton	0	5	0
Barnard, John, 338, Oxford Street	1	1	0
Barnes, J. B., 1, Trevor Ter., Knightsbridge	0	10	6
Barron, F., Bush Lane, Cannon Street	2	2	0
Bartlett, William, 1, Bretten Terrace	0	10	6
Bate, H., Thorne Rd., South Lambeth	0	10	6
Beaton, Wm. John, 315, Edgeware Rd.	0	10	6
Beattie, J., 144, Asylum Rd., Peckham	0	5	0
Bell, William H., 96, Albany Street.	0	10	6
Bentley, Prof., 17, Bloomsbury Square.	1	1	0
Best, James, Harrow Road, W.	0	10	6
Betty, S. C., 6, Park St., Regent's Pk.	0	10	6
Bigg, Thomas, Great Dover St., S.E.	1	1	0
Billing, Thomas, 143, New Bond Street	0	10	6
Binge, Thos., 23, Stockbridge Terrace, Pimlico, S.W.	0	10	6
Bird, Augustus, Shepherd's Bush	2	2	0
Bird, Robert, Clapham, S.W.	0	10	6
Bird, W. L., 42, Castle St., Oxford St.	1	1	0
Blake, Charles Titcomb, 47, Piccadilly.	1	1	0
Bolton, Thomas, 98, Queen's Rd., N.E.	0	5	0
Bourdas, Isaiah, 7, Pont Street, S.W.	1	1	0
Bourdas, Isaiah, jun., 48, Belgrave Rd.	1	1	0
Bourdas, John, 7, Pont Street, S.W.	1	1	0
Bowden, Edward and Ambrose, Charles Street, St. James's	1		0
Bradley, John, 8, Brondesbury Terrace	1	1	0
Breton, Walter, 137, Cannon St., E.C.	0	10	6
Bromley, R. Martin, Denmark Hill	0	10	6
Brooks, Chas. Southville, Wandsworth Road, S.W.	0	10	6
Brown, Henry F., 40, Aldersgate St.	0	10	6
Bryant, John, 338, Oxford Street	0	5	0
Buckle, C. F., 77, Gray's Inn Road	1	1	0
Burden, Thomas, 6, Store Street, W.C.	0	10	6
Burgoyne and Burbidges, 16, Coleman Street, E.C.	2	2	0
Chard, F. J., 39, Warwick St., Pimlico	0	10	6
Cheetham, W. H., Commerce Place, Brixton Road, S.W.	0	10	6
Chemists' Ball, Committee of the (*don.*)	21	0	0
Chubb, James C., 102, St. John St.	1	1	0
Churchyard, R. L., 112, Camden Rd.	0	10	6
Cocksedge, H. B., 20, Bucklersbury	0	10	6
Coles, J. W., 197, Camberwell New Rd.	0	10	6
Coles, Charles, 1, King's College Road.	0	10	6
Coles, Ferdinand, 248, King's Road	0	10	6
Constance, E., 37, Leadenhall St., E.C.	0	10	6
Cooke, John, 126, Hoxton Street, N.	0	10	6
Cooper, W. Henry, Hornsey Road, N.	0	10	6
Corbyn and Co., 300, Holborn, W.C.	1	1	0
Cornelius, J., 73, Camden Road, N.W.	0	10	6
Cracknell, Charles, 217, Edgware Road	2	2	0
Croyden, Charles, 37, Wigmore Street	0	10	6
Darby and Gosden, 140, Leadenhall St.	2	2	0
Davenport, J. T., 33, Great Russell St.	2	2	0
Davies, William, 293, Gray's Inn Road	0	10	6
Davy, Yates, and Routledge, New Park Street, S.E.	2	2	0
Deane, H., Clapham Common, S.W.	1	1	0
Dinneford and Co., 172, New Bond St.	2	2	0
Diamorr, Henry, 6, Store Street, W.C.	0	10	6

	£	s.	d.
Doubell, James, 17, Archer Street, W.	0	5	0
Dyson, W. B., South Kensington . .	0	10	6
Eade, George, 72, Goswell Road, E.C.	0	10	6
Elkington, Edward, 56, Grange Road .	1	1	0
Ellis, G. H., 4, Finsbury Pavement .	0	10	6
Elvey, Thomas, 8, Halkin Street West.	1	1	0
Epps, F., 112, Great Russell St. (*don.*)	3	3	0
Evans, J. H., 60, Bartholomew Close .	1	1	0
Evans, H. S., 60, Bartholomew Close .	1	1	0
Faulconer, R. S., 270, Walworth Road	1	1	0
Field, James J., 22, Upper Gifford St.	1	1	0
Fincham, Robert, 57, Baker Street . .	1	1	0
Fisher and Haselden, 18, Conduit St. .	1	1	0
Fitch, Robert O., Well St., Hackney .	0	10	6
Foott, R. R., 8, Stockbridge Terrace .	0	10	6
Forrest, R., 20, Cork St., Bond St., W.	1	1	0
Fowler, Stanley, 36, Elgin Crescent, W.	1	1	0
Fox, William, 109, Bethnal Green Road	1	1	0
Francis, Geo. B., 5, Coleman St., E.C.	1	1	0
Froom, W. H., 75, Aldersgate Street .	1	1	0
Gadd, C., 1, Harleyford Rd., Vauxhall	0	10	6
Gadd, Henry, High St., Kingsland . .	1	1	0
Gadd, R., 1, Harleyford Rd., Vauxhall	0	5	0
Gale, H., 3, Milbrook Pl., Camden Tn.	0	10	6
Gale, Samuel, 338, Oxford Street . .	1	1	0
Gedge, W. Stedman, 90, St. John St. .	0	10	6
Glover, George, 19, Goodge Street, W.	1	1	0
Goddard, G. E., 37, Chapel St., S.W. .	1	1	0
Goodchild, N., 79, Kentish Town Road	0	2	6
Gristock, T., 42, South St., Manchester Square	1	1	0
Grundy, T., 37, Leadenhall St., E.C. .	0	10	6
Haddock, George J., 338, Oxford St. .	0	5	0
Hardy, Samuel C., 338, Oxford Street .	0	10	6
Harris, Daniel R., 55, St. James's St.	0	10	6
Henly, J. C., 127, Aldersgate St., E.C. .	1	1	0
Henty, H. M., St. John's Wood . . .	0	5	0
Herrings and Co., 40, Aldersgate St. .	2	2	0
Hickey, Evan L., King's Road, Chelsea	0	10	6
Hickley, T. P., 297, Edgeware Road .	0	10	6
Hill, Arthur B., 11, Little Britain, E.C.	1	1	0
Hill, Arthur S., 11, Little Britain, E.C.	1	1	0
Hills, Thomas Hyde, 338, Oxford St. .	5	5	0
Hodgkinson, C., 127, Aldersgate Street	0	10	6
Hodgkinson, Stead, and Treacher, 127, Aldersgate Street, E.C.	2	2	0
Holford, Thomas C., Stratford . . .	0	10	6
Holmes, Walter M., 338, Oxford St. .	0	5	0
Hooper, Bartlett, 48, King William St.	1	1	0
Hooper, Leonard, 48, King William St.	0	10	6
Hopkin, W. K., 5, New Cavendish St.	1	1	0
Hora, Henry W., 58, Minories, E. . .	1	1	0
Horncastle, J., 17, Craven Road, W. .	0	10	6
Howden, R., 78, Gracechurch Street .	1	1	0
Howell, Maurice, Peckham	0	10	6
Hugill, John, 147, Cannon Street, E.C.	1	1	0
Humpage, Benjamin, Turnham Green.	0	10	6
Hunt, Charles, 29, Chapel Street, S.W.	0	10	6
Hunter, J., 22, High St., Kensington .	0	5	0
Hyslop, John C., 54, New Church St. .	0	5	0
Ince, J., 26, St. George's Place, Knightsbridge	1	1	0
Jacks, Ebenezer, 161, Gower St., W.C.	0	10	6
Jackson, James B., 69, Bishopsgate St. Within	1	1	0
Jefferson, Thomas, Clapham	0	10	6
Jeynes, G. W., 62, Princess Street, Edgeware Road, W.	0	5	0
Johnson, B. M., 70, Tottenham Court Road, W.	0	10	0
Jones, Peter, Norton Folgate . . .	1	1	0
Jones, William, Richmond Terrace, Shepherd's Bush	0	5	0
Kemp, Robert, 295, Holloway Road .	0	10	0
Kendall, Charles F., 126, Clapham Road	0	10	6
Kent, Thomas, 226, Blackfriars Road .	0	10	6

	£	s.	d
Kent, Thomas R., 338, Oxford Street .	0	10	6
Kernot, George C., 3, Chrisp St., Poplar.	0	10	6
King, Thomas W., 108, Crawford Street	0	5	0
Knott, Samuel, 15, Norton Folgate .	0	5	0
Lacey, Samuel, 21, Vassall Rd., North Brixton	0	2	6
Large, John H., 65, New North Road .	0	10	6
Lawrence, Fredk., Kentish Town Rd. .	0	10	6
Lescher, J. S., 60, Bartholomew Close	1	1	0
Lidwell, J. E., 130, High St., Notting Hill	0	10	6
Linford, John S., 146, Holborn Bars .	0	10	6
Long, Henry, 48, High St., Notting Hill	1	1	0
M'Culloch, F., Hart St., Covent Garden	1	1	0
Matthews, Wm., 12, Wigmore St., W.	0	10	6
Maw, Son, and Thompson, 11, Aldersgate Street, E.C.	2	2	0
Meggeson, George, St. John's Wood .	1	1	0
Merrell, James, 1, Queen's Terrace, Camden Road	1	1	0
Middleton, Francis, 338, Oxford Street	1	1	0
Mitchell, J., 254, Upper St., Islington .	0	10	6
Morgan, David, 25, Brecknock Road .	0	10	6
Mould, Samuel, 21, Moorgate Street .	0	10	6
New, Walter W., 238, Essex Road, N.	0	10	6
Newzam, Henry, 40, Theberton St., N.	0	10	6
Nicholson, F., 216, St. Paul's Road, N.	1	1	0
Northway, J., 27, Gt. Tower St., E.C. .	1	1	0
Orpe, Thomas M., 329, Old Kent Road	0	10	6
Orridge, B. B., 32, Ironmonger Lane .	1	1	0
Paffard, Walter H., 338, Oxford St. .	0	5	0
Palmer, Robert, 35, Ovington Square .	1	1	0
Parker, J. D., 40, Aldersgate Street .	0	10	6
Penrose, Arthur W., 5, Amwell Street	0	10	6
Pidduck, John, Harrow Road . . .	0	10	6
Plummer, George, Peckham	1	1	0
Preston and Son, 88, Leadenhall Street	2	2	0
Price, J. M., Loughboro' Pl., Brixton Rd.	0	5	0
Quiller, C. R., 15, Sloane Square, S.W.	0	10	6
Quinlan, J., 59, Barnsbury Road, N. .	0	10	6
R. N.	0	2	6
Richardson, George, 12, Norland Place, Notting Hill	0	10	6
Ringrose, George, 123, St. George's St.	0	10	6
Roach, Pope, 8, St. James's Street . .	0	10	6
Robbins, J., and Co., 372, Oxford St. .	1	1	0
Rose, Alfred, 441, Edgeware Road . .	0	10	6
Rouse, F. J., High St., Clapham, S.W.	0	10	6
Rowe, R., Richmond Rd., W. Brompton	0	10	6
Rowntree, Thomas, Westbourne Road, Barnsbury	0	10	6
Rowson, Henry, 2, Chichester St., W. .	0	10	6
Sadler, William, 15, Norton Folgate .	0	10	6
Salman, Thomas, 81, Cornwall Road .	0	10	6
Sandford, George Webb, 47, Piccadilly	1	1	0
Sangster, Arthur, St. John's Wood .	1	1	0
Schacht, W., 6, Finsbury Place South .	0	10	6
Selleck, Edward, Apothecaries' Hall .	0	2	6
Shephard, Thomas F., 37, All Saints Rd.	0	10	6
Smallfield, J. S., 10, Little Queen St.	0	10	6
Smith, F. W., Newington Causeway .	0	5	0
Smith, Wm. P., 280, Walworth Road .	1	1	0
Smith, William, South Hackney, E. .	0	10	6
Starkie, Richard S., 4, Strand . . .	1	1	0
Stathers, J., Norland Rd., Notting Hill	0	10	6
Steel, Frank W., 283, Liverpool Road .	0	10	6
Steer, Philip R., Mare St., Hackney .	0	10	6
Stickland, W. H., South Kensington .	0	10	6
Stocken, James, Euston Square, N.W.	0	5	0
Stoneham, Philip, 45, Craven Road .	0	10	6
Taplin, Wm. G., 75, Hampstead Road	1	1	0
Taylor and Co., 10, Little Queen St. .	1	1	0
Taylor, Matt., 3, Rye Lane, Peckham	0	10	6
Taylor, T., 6, Shard's Ter., Peckham .	0	10	6
Thompson, Henry A., 22, Worship St.	1	1	0
Thompson, John, 11, Aldersgate Street	1	1	0

	£	s.	d.
Thorn, John J., 338, Oxford Street	0	5	0
Tippett, Benjamin M., 3, Sloane Street	0	10	6
Townsend, C., 40, Aldersgate Street	0	10	6
Treloar, Thomas, 67, Ludgate Hill	1	1	0
Trotman, Alfred Court, 16, Cambridge Street, Hyde Park	0	10	6
Turner, C. E., Great Russell St., W.C.	0	10	6
Umney, C., 40, Aldersgate St., E.C.	0	10	6
Viser, E. B., 68, Lupus St., Pimlico	1	1	0
Wallis, John T. W., 338, Oxford St.	0	5	0
Warner, Carter, and Co., 90, Charterhouse Square, E.C.	1	1	0
Warner, Charles H., 55, Fore St., E.C.	1	1	0
Waugh, Alex., 177, Regent Street, W.	0	10	6
Weston, Samuel John, 151, Westbourne Terrace, W.	1	1	0
Westrup, Joseph B., 76, Kensington Park Road	0	10	6
Whincup, William, 404, Essex Road	0	10	6
Whitburn, A. R., 174, Regent St., W.	0	10	6
Wigg, Henry John, 338, Oxford Street	0	10	6
Williams, J. J., Harrow Road, W.	0	10	6
Williams, John, 5, New Cavendish St.	1	1	0
Willows, Jesse, 101, High Holborn, N.	1	1	0
Wilson, T., Wellington House, Upper Holloway	0	10	6
Wooldridge, John, 290, Euston Road	0	10	6
Wootton, William, Liverpool Road	0	5	0
Worboys, A. H., 163, Kentish Town Rd.	0	10	6
Wyman, John, 122, Fore Street, E.C.	1	1	0
W. T. C.	0	10	6
Young, George, Millwall, E.	0	5	0

Country.

	£	s.	d.
Abergavenny, Ackrill, George	0	10	6
Altrincham, Foden, Joel	0	10	6
,, Hughes, Edward	0	10	6
,, Hughes, John Taylor	0	10	6
,, Siddeley, John	0	10	6
Arbroath, Milne, Patrick	1	1	0
Ashbourne, Bradley, Edwin S.	0	10	6
Banbury, Ball, George V.	0	10	6
Barking, Fitt and Son	0	10	6
Barnstaple, Curtis, William	0	10	6
,, Goss, Samuel	0	10	6
Bath, Lear, William M.	0	10	6
,, Pooley, John C.	0	5	0
,, Rolfe, William Adolphus	0	5	0
,, Tylee, John P.	0	10	6
Beckenham, Day, Thomas S.	0	10	6
Bedford, Anthony, John L.	0	10	6
,, Ekins, John	0	5	0
,, Stewardson, Henry	0	10	6
,, Taylor and Cuthbert	0	10	6
,, White, John L.	0	10	6
Berwick, Carr, William Graham	0	10	6
,, Davidson, John	0	10	6
Beverley, Robinson, James Mowld	0	5	0
Bewdley, Newman, Robert	0	10	6
Bickley, Garle, John (*don.*)	5	5	0
Bilston, White, Thomas	1	1	0
Birmingham, Anderton, Samuel	1	1	0
,, Foster, Alfred H.	0	5	0
,, Palmer, Charles F.	0	10	6
,, Snape, Edward	0	5	0
,, Southall, Son, and Dymond	1	1	0
Blandford, Groves, Wellington E.	0	10	6
Bodmin, Williams, Joel D.	1	1	0
Boston, Marshall, Robert	0	5	0
,, Thomas, John H. and Son	0	10	6
Bradford, Harrison and Parkinson	2	2	0
,, Hick, Joseph	0	10	6
,, Rogerson, Michael, and Son	2	2	0
,, Walker, John	0	10	6
Brentwood, Guest, Edward P.	0	5	0
Bridge, Thomas, James	0	5	0
Bridgnorth, Steward, William	0	10	6
Bridport, Beach, James	0	10	6
,, Beach and Barnnott	1	1	0
Brighton, Barton, Charles	0	10	6
,, Barton, Henry	0	10	6
,, Brew, Thomas Archer	0	10	6
,, Cornish, William	0	5	0
,, Else, William	0	10	6
,, Foster, Frederick	0	10	6
,, Glaisyer and Kemp	1	1	0
,, Gwatkin, James Thomas	0	10	6
,, Haffenden, Thomas	0	5	0
,, Noakes, Richard	0	10	6
Brighton, Robson, Thomas	0	10	6
,, Savage and Son, Messrs.	1	1	0
Bristol, Ackerman, Theophilus	1	1	0
,, Butler, Samuel	0	10	6
,, Dowell, William C.	1	1	0
,, Giles, Richard W. (in memory of the late Richard Bobbett Giles) (*don.*)	10	10	0
,, Hodder, Henry	0	5	0
,, Margetson, James	0	10	6
,, Sircom, Richard	0	10	6
,, Stoddart, William W.	0	10	6
Bromley, Baxter, William W.	0	10	6
,, Shillcock, Joseph B.	0	10	6
Broseley, Stevens, John	0	10	6
Buckingham, Sirett, George	0	10	6
,, Sirett, George B.	0	10	6
Burslem, Blackshaw, Thomas	0	10	6
Cambridge, Deck, Arthur	0	10	6
Canterbury, Amos, Daniel	0	10	6
,, Harvey, Sidney	0	10	6
,, Gardner, Austen Walter	0	10	6
,, Paine, William	0	10	6
Carlisle, Thompson, Andrew	0	5	0
Chapel Allerton, Trant, William	0	10	6
Chatham, Crofts, Holmes C.	0	10	6
,, French, Gabriel	0	10	6
,, Tribe, John	0	10	6
Chelmsford, Baker, Charles P.	0	10	6
,, Baker, Garrad	0	10	6
,, Seaton, George	1	1	0
Cheltenham, Fletcher and Palmer	1	1	0
Chester, Hodges, William	1	1	0
Chew Magna, Milton, Thomas	0	2	6
Chichester, Pratt, John	0	10	6
Cirencester, Smith, Charles S.	1	1	0
Clapton (*Lower*), Goodwin, John	1	1	0
,, (*Upper*), Granger, Edwin J.	1	1	0
Cockermouth, Bowerbank, Joseph	1	1	0
Colchester, Chaplin, John L.	0	5	0
,, Cole, Frederick A.	0	5	0
,, Kirkman, Charles John	0	5	0
,, Manthorp, Samuel	0	5	0
,, Prosser, Evan T.	0	5	0
,, Shenstone, James B.	0	5	0
Colsterworth, Wing, Samuel W.	0	10	6
Coventry, Hinds, James	0	10	6
Crook, Wilson, James	0	10	6
Croydon, Long, Henry	0	10	6
,, Stannard, Frederick John	0	5	0
Deal, Green, John	0	10	6
Deptford, Lockyer, George	0	10	6
,, Wickham, William	0	10	6
Derby, Richardson, John	0	2	6
Devizes, Madge, James C.	0	10	6

	£	s.	d.
Diss, Cupiss, Francis	0	10	6
Doncaster, Howarth, James	0	10	6
Dorking, Clark, William W.	0	10	6
Dover, Bottle, Alexander	1	1	0
,, Brown, Joseph Frederick	0	10	6
,, Forster, Robert	0	10	6
,, Forster, Robert Henry	0	5	0
,, Hambrook, John B.	0	5	0
Dudley, Wilson, Richard Bowes	0	10	6
Durham, Burdon, John	0	10	6
,, Rollin, John George	0	10	6
,, Sarsfield, William	0	10	6
,, Scawin and Wortley	0	10	6
,, Willan, James	0	10	6
Ealing, Barry, Thomas	0	10	6
Edinburgh, Aitken, William	0	10	6
,, Baildon, Henry C.	1	1	0
,, Buchanan, James	1	1	0
,, Macfarlan, J. F. and Co.	2	2	0
,, Mackay, John	1	1	0
,, Stephenson, Frederick	0	5	0
Eton, Bingham, W. H.	0	10	6
,, Lewis and Son	1	1	0
Exeter, Cooper, George	0	10	6
,, Husband, Matthew	0	10	6
,, Napier, George L.	0	5	0
,, Palk, John	0	10	6
,, Stone, John	0	5	0
Fareham, Batchelor, Charles	0	5	0
Farnham, Crook, George	0	10	6
,, Walton, George Chapman	0	10	6
Folkestone, Hammon, Richard	0	5	0
Fowey, Wellington, James	0	2	6
Gainsborough, Marshall, John Ferris	0	10	6
Gateshead, Elliott, Robert	0	10	6
,, Garbutt, Cornelius D.	0	10	6
Gipsy Hill, Pratt, Francis	0	10	6
,, Prime, Thomas Robert	0	10	0
Gloucester, Berry, Edward	0	5	0
,, Stafford, William	0	5	0
Gosport, Hunter, John	0	5	0
,, Mumby, Charles	0	10	6
Grantham, Hall, Thomas	0	10	6
Gravesend, Beaumont, William H.	1	1	0
,, Spencer, Charles	1	1	0
Greenwich, Tugwell, Wm. Henry	0	10	6
Guildford, Martin, Edward W.	0	10	6
,, Shepherd, George P.	1	1	0
Hambledon, Gunn, John	0	5	0
Hampstead, Eve, Charles	0	10	6
Hampton, Nunn, Charles G.	1	0	0
Harleston, Muskett, James	0	10	6
Harrogate, Coupland, Jos.	0	10	6
,, Greenwood, John	0	10	0
,, Taylor, Joseph H.	0	10	6
Hartlepool (*West*), Cooper, S. H.	1	1	0
Harwich, Bevan, Charles F.	0	10	6
Hastings, Bell, James Alfred	0	10	6
,, Miller, Frederick	1	1	0
Haverfordwest, Saunders, David Price	0	10	6
Hay, Davies, J. L.	0	5	0
Heavitree, Brailey, Charles	0	5	0
Heckmondwike, Booth, John	1	1	0
Hedon, Soutter, Messrs.	0	10	6
Hendon, Goldfinch, George	0	10	6
Heywood, Beckett, William	0	10	6
Hirwain, Sims, Joseph	0	10	6
Honiton, Turner, George	0	10	6
Horsham, Williams, Philip	0	10	6
Huddersfield, Bygott, William T.	0	10	0
,, Fryer and King	1	1	0
,, Huggins, Tom S.	0	10	6
Hull, Akester, Joseph Coultas	0	5	0
,, Allison, Brothers	1	1	0
,, Anholm, August	0	10	6
,, Balk and Shepherdson	0	5	0
Hull, Barlow, George	0	5	0
,, Baynes, James	0	10	6
,, Bell, Charles B.	0	10	6
,, Billamy, Lawrence M.	0	2	6
,, Des Forges, Joseph Henry	0	5	0
,, Dixon, Joseph	0	5	0
,, Dobson, John Benjamin	0	5	0
,, Dyson, George	0	5	0
,, Earle, Francis	0	10	6
,, Escreet, James	0	5	0
,, Fisher, John R.	0	5	0
,, Gibson, Charles P.	0	10	6
,, Green, Alfred	0	5	0
,, Grindall, William	0	5	0
,, Hammond, Charles Thomas	0	10	6
,, Hall, Henry R. F.	0	10	6
,, Hart, George W.	0	10	6
,, Hollingsworth, James	0	5	0
,, Hutchinson, John Clement	0	5	0
,, Kirton, Joseph B.	0	10	6
,, Lofthouse and Saltmer	1	1	0
,, Milner, John George	0	5	0
,, Myers, George	0	5	0
,, Preston, John	0	5	0
,, Smith, Anthony	0	10	6
,, Staning, William	0	5	0
,, Toogood and Sons	0	5	0
,, Wokes, George	0	5	0
Ipswich, Whiteman, Frederick	0	2	6
Jedburgh, Rawdin, Joseph	0	5	0
Jersey, Millais, Thomas	1	1	0
Kendal, Severs and Bateson	1	1	0
Kidderminster, Bond, Charles	0	10	6
Kilmarnock, Borland, John	0	10	6
,, Rankin, William	1	1	0
Landport, Hackman, L. L.	0	10	6
,, Tryon, William G.	0	5	0
Leamington, Barnitt, John	0	10	6
,, Davis, Henry	0	5	0
,, Jones, Samuel U.	0	10	6
,, Pullin, William H.	0	10	6
,, Seath and Woolcott	0	10	6
Leatherhead, Hewlins, Edward	0	10	6
Leeds, Bilbrough, J. B.	0	10	6
,, Brooke, Thomas	0	10	6
,, Goodall, Backhouse, and Co.	1	1	0
,, Harvey, Thomas	1	1	0
,, Hirst, James Andus	0	10	6
,, Jefferson, Peter	0	5	0
,, Reynolds, Richard	1	1	0
,, Sagar, Henry	0	5	0
,, Smeeton, William	0	10	6
,, Taylor and Fletcher	1	1	0
,, Yewdall, Edwin	0	10	6
Lees, near Oldham, Marlor, Jabez	0	10	6
Leicester, Cooper, Thomas	0	10	6
,, Hinkley, Edward	1	0	0
,, Salisbury, William Bryan	0	10	6
Leighton Buzzard, Richmond, Robert	0	10	3
Leominster, Davis, David Frederick	1	1	
Lewes, Head, John	0	10	6
,, Martin, Thomas	0	10	6
,, Saxby, Henry	0	10	6
Lewisham, Clift and Crow	1	1	0
Lincoln, Tomlinson, Charles K.	0	10	6
Liverpool, Parkinson, Richard	0	5	0
Llangollen, Jones, Humphrey	0	5	0
,, Wynne, E. P.	0	10	6
Loughborough, Paget, John	0	5	0
Louth, Hurst, John	0	10	6
Lowestoft, Edmonds, Benjamin M.	0	5	0
Ludlow, Cocking, George	0	5	0
Lye, Jones, Rowland G.	0	5	0
Lymington, Allen, Adam U.	0	5	0
Machynlleth, Rees, Edward	0	10	6
Malvern (*Great*), Burrows, Messrs.	1	1	0

	£	s.	d.
Malvern Link, Gwillim, John C. . . .	0	10	6
Manchester, Brown, William Scott . .	1	1	0
,, Carter, William	0	10	6
,, Hampson, Robert . . .	0	10	6
,, Jackson, Thomas . . .	0	10	6
,, Johnstone, Charles A. . .	0	10	6
,, Macminn, James	0	5	0
,, Mitchell, John	0	10	6
,, Mumbray, Henry G. . .	1	1	0
,, Walsh, Edward	0	10	6
,, Wilkinson, William . .	0	10	6
,, Woolley, James	2	2	0
Market Drayton, King, William George	1	1	0
Maryport, Cockton, John	0	5	0
Merthyr Tydfil, Thomas, Rees . . .	0	5	0
Monmouth, Dawe, Sampson	0	10	6
Netherstowey, Ham, John	1	1	0
Netley, Borchert, Heinrich T. G. . .	0	10	6
Newcastle-on-Tyne, Potts, Thomas . .	0	10	6
,, ,, Proctor, B. S. . . .	1	1	0
Newcastle-under-Lyne, Cartwright, W.	0	10	6
Newport, Monmouthshire, Pearman, H.	0	10	6
,, Phillips, J. .	0	10	6
,, Young, John	0	10	6
Newton Abbott, Poulton, John . . .	0	10	6
Newtown, Morgan, Richard	0	10	6
Northallerton, Warrior, William . .	0	10	6
Northampton, Barry, James	1	1	0
,, Mayger, William D. . . .	0	10	6
Norwich, Arnold, Edward	0	5	0
,, Caley, Albert I.	0	10	6
,, Sutton Francis	0	10	6
Norwood (*Upper*), Birch, Henry C. . .	1	1	0
Oakham, Wellington, James M. . . .	0	10	6
Odiham, Hornsby, John H.	0	10	6
Oldham, Braddock and Bagshaw . .	1	1	0
,, Bates, Henry	0	10	6
,, Hargraves, Henry L. . . .	0	10	6
,, Henthorn, Joshua	0	10	6
,, Wild, David	1	1	0
Oswestry, Vaughan, David	0	10	6
Otley, Pratt, Richard M.	0	10	6
Oxford, Prior, George T.	0	10	6
Pembroke Dock, Andrews, Charles . .	0	10	6
Peterborough, Sturton, Richard . . .	1	1	0
Petersfield, Edgeler, William B. (*don.*)	5	5	0
Petherton, South, Wellington, F. G. N.	0	5	0
Plymouth, Balkwill, Alfred P.	0	5	0
,, Burdwood, James	0	5	0
,, Northcroft, Jonathan . . .	0	5	0
,, Sloggett, Thomas C.	0	2	6
Portobello, Kemp, David	0	10	6
Portsmouth, Parsons, William . . .	0	10	6
,, Pasmore, George	0	5	0
Preston, Hogarth, William	1	1	0
,, Houghton, William	0	10	6
,, Oakey, Joseph M.	0	10	6
Putney, Jeffcoat —	0	2	6
,, Jones, Thomas	0	5	0
Ramsgate, Fisher and Sons	2	2	0
,, Truman, Henry Vernon . .	1	1	0
Retford, Baker, William	0	10	6
Richmond (*Surrey*), Clarke, Thos. M. .	0	10	6
,, Hopwood and Son	1	1	0
Richmond (*Yorks.*), Thompson, Thomas	0	10	6
Rochester, Harris, Henry W.	0	10	6
Romford, Lusham, John	0	5	0
Rothesay, Macintosh, Archibald . . .	0	5	0
Rugby, Garratt, John C.	0	5	0
,, Garratt, Samuel	0	5	0
,, Lewis, Thomas C.	0	10	6
Ryde (*I. of W.*), Dixon, Henry . . .	0	10	6
,, Gibbs, William . . .	0	10	6
,, Pinniger, William .	0	10	6
,, Taylor, Richard . .	0	10	6
,, Wavell, John	0	10	6
Rye, Plomley, James Foulis	0	10	0
,, Smith, Alfred William	0	10	6
St. Alban's, Roberts, Albinus	1	1	0
,, Martin, H. G.	0	10	6
St. Austell, Geldard, John	0	10	0
St. Day, Corfield, Thomas J. T. . . .	0	10	6
Salford (*Lancs.*), Manfield, John W. .	0	5	0
Salisbury, Atkins, Samuel R.	0	10	6
Seacombe, Holt, Richard Wylde . . .	0	5	0
Sheffield, Ellinor, George	0	10	6
,, Jennings, John E. H.	0	10	6
,, Maleham, Henry	0	10	6
,, Priestley, Henry	0	10	6
,, Radley, William Valentine .	0	10	0
,, Wilson, Edward	1	1	0
Shefford, Baigent, W. H.	0	10	6
Shrewsbury, Cross, William G.	0	10	6
,, Blunt, Thomas	0	10	6
,, Blunt, Thomas, jun. . . .	0	10	6
,, Edwards, William . . .	0	10	6
,, Salter, J. B.	0	10	6
Sleaford, Heald, Benjamin	0	10	6
Southampton, Palk, Edward	1	1	0
,, Randall, W. B.	1	1	0
Southport, Ashton, William	0	5	0
,, Walker, William H.	0	10	6
Southsea, Rastrick and Son	0	10	6
,, Cruse, Thomas H.	0	10	6
South Shields, Mays, Robert J. J. . . .	0	10	6
Sowerby Bridge, Stott, William . . .	0	10	6
Spalding, Swift, Francis	0	10	6
Spennymoor, Prudhoe, Robert . . .	0	10	6
Stafford, Averill, Henry A.	1	1	0
,, Averill, John	1	1	0
Stockton-on-Tees, Bainbridge, Robt. R.	0	2	6
,, Brayshay, Thomas .	0	10	6
,, Brayshay, W. B. . .	1	1	0
,, Clarke, William . .	0	2	6
,, Hodgson, E., & Son	0	10	6
Stourbridge, Bland, John H.	0	10	6
,, Hughes, Samuel	0	10	6
,, Loverock, Henry	0	5	0
,, Morris, Alfred Philip . .	0	10	6
,, Perks, Francis	0	10	6
,, Whitwell, George . . .	0	5	0
Stowmarket, Simpson, Thomas . . .	0	5	0
,, Sutton, C. W.	0	5	0
Stroud, Coley, Samuel James	0	10	6
Sunbury, Robinson, John T.	0	1	6
Sydenham, Holloway, Thomas H. . . .	0	10	6
,, J. M. W.	0	3	6
,, Lang, William	1	1	0
,, Pocklington, James . . .	0	10	6
Taunton, Evans, J. J.	0	5	0
,, Fouracre, Robert	0	10	6
,, Gregory, George Henry . .	0	5	0
,, Hambly, Charles Joseph .	0	10	6
,, Pearse, John	0	5	0
,, Prince, Henry	0	10	6
,, Redman, Sidney	0	5	0
Teignmouth, Cornelius, R. Bayly . .	0	5	0
Thirsk, Thompson, John	0	10	6
Tickhill, Crowther, Thomas	0	10	6
Tiverton, Bond, Lawrence V.	0	10	6
Todmorden, Lord, Charles	1	1	0
Tottenham, Bently, William James .	0	10	6
Trimpley, Steward, Josiah	0	10	6
,, Steward, Theophilus . . .	0	10	6
Tring, Chapman, John	0	10	6
Tunbridge Wells, Gardner, Charles .	0	10	6
,, Sells, Robert James .	0	10	6
Twickenham, Bishop, Thomas	0	10	6
Uttoxeter, Johnson, John B.	0	10	6
Wakefield, Gissing, T. W.	0	10	6
,, Romans, Thomas Wood .	0	10	6
,, Taylor, John	0	10	6

	£	s.	d.
Wallingford, Payne, Sidney	1	1	0
Walton-on-Thames, Power, Edward	0	10	6
Wandsworth, Nind, George	0	10	6
„ *New*, Crosby, James	0	10	6
Watford, Chater, Jonathan and Son	1	11	6
Wellingborough, Thorne, John	0	10	6
Welwyn, Lawrance, Edmund	0	11	0
Weymouth, Groves, Thomas Bennett	0	10	6
Winchester, Powell, Edward	1	1	0
Windsor, Boyce, John Pierce	0	10	6
„ Collins, H. G.	0	5	0
„ Crook, E.	0	10	6
Windsor, Grisbrook, E.	0	10	6
„ Leigh, John	0	10	6
„ Russell, Charles J. L.	0	10	6
„ Weller, George	0	10	6
„ Wetherhead, E.	0	10	6
Withington, Terry, Thomas	0	5	0
Woodbridge, Betts, John	0	10	6
Woolwich, Parkes, John C.	0	10	6
„ Rastrick, John A.	0	10	6
Worcester, Witherington, Thomas	1	1	0
Wyke, Drake, William	0	2	6
Yarm, Reed, George	0	10	6

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the* Editor, *17, Bloomsbury Square, as early in the month as possible, and in no case later than the 20th of the month, if intended for publication in the next number.

Sale of Homœopathic Medicines.

Sir,—In the correspondence of this month, a letter appears from Mr. Giles upon the reprehensible and demoralizing system of combining the sale of homœopathic medicines with the practice of pharmacy, and I may say that I read it with much interest, from its being the production of such an able pharmacist, for I have always looked upon that gentleman as one of the lights and guiding stars of our Society.

In the preface, Mr. Giles admits that "pharmacy can never be other than a trade or business;" from which I infer that it is not inconsistent to combine with it the sale of such articles as are compatible with the character of the business, and which the necessities of the district require the chemist to supply. In the great majority of provincial towns a reliable pharmacy is absolutely necessary, yet the proceeds arising from it would afford but the barest pittance unless combined with the sale of other articles; and, as chemists form no exception to the rule of those hastening to get rich, many are induced, sometimes to their disappointment, in their "over-eagerness to make money," as Mr. Giles terms it, to combine with their business the manufacture of various substances, such as aerated waters, artificial manures, charcoal, etc. As one of the articles of sale in a chemist's shop, homœopathic medicines are amongst the least objectionable, for they are sent out by the wholesale manufacturers in a very convenient form, requiring no trouble from the vendor, except folding them up and handing them to the customer; and they are in such small bottles, that a chest two feet square is capable of holding a considerable stock; the manufacturer supplies the chest, which, if the chemist be inclined to exhibit, is rather ornamental than objectionable. As an illustration of my case I will not select an ideal personage, but a *boná fide* one,—myself,—as I think that I shall be found no exception to the class of chemists who indulge in the "handy-dandy pranks" of which Mr. Giles complains. I am located in a town of twenty-five thousand inhabitants, amongst whom is a considerable number of wealthy manufacturers, and a goodly number of country gentry have their seats in the surrounding district. We have no resident physician, and the medical men supply their own medicines. There are half-a-dozen chemists in the town, and the prescriptions presented them to dispense are only such as have been obtained in other towns, and, of course, the number is very limited, and the gain derived from dispensing them very small. I make bold to say that I conduct that part of my business with as rigid an observance of pharmaceutical morality as is practised at the Clifton establishment, and I am favoured with a fair proportion of patronage for my pains; but if dependent upon that alone, I should barely be enabled to keep my head above water, so I combine with it the sale of such articles as are compatible with my business. There is a growing demand for homœopathic medicines, and some of my neighbours have long kept a stock equal to the demand. For some years I took a very exalted view of the matter, and declined to keep them, although I was obliged during the whole time to keep an account with a London homœopathic firm, in order to supply those of my patrons who gave me to understand that they preferred having their globules, etc., from me rather than procure them elsewhere. I don't know what Mr. Giles would have done under the circumstances, but I felt in duty bound to oblige my customers, and I was vain enough to suppose that the confidence which I had gained with respect to the quality of my drugs, and the care in manipulating them, was the cause of the preference being given to me for supplying the homœopathic preparations. The demands became so frequent that, for expediency, I was induced to lay in a complete stock; and I am now one of those pitiable creatures upon whom Mr. Giles vents his ire. This brings me to a comparison of my case with Mr. Giles's ideal personage. The physician is, strictly speaking, a professional man, and any abnegation of the principles of his profession renders him unworthy of the title. With myself it is widely different, for I sacrifice no professional principles; I am not consulted as to the peculiar merits of the preparations, nor am I called upon to prescribe them, for the disciples of homœopathy are wisely provided by means of books with all the information necessary, so that they are enabled to prescribe for themselves. I neither believe in their efficacy nor advocate their use, and, in the absence of a homœopathic pharmacy, I simply sell them the same as I do patent medicines and Atkinson's perfumery. Because I yield to expediency in such a case, am I to be branded with the imputation that I am just as likely to supply powdered slate pencil for powdered scammony, and that for a trifle I would sell my conscience with my goods? I feel bound to resent such an imputation, and I consider that Mr. Giles, in his overzeal to gain for the pharmacist a professional status, which he himself admits must ever be of a limited character, is exceeding his mission, and it would be much more becoming if he would confine his abilities to his own well-regulated pharmacy. If he is anxious to give his craft the benefit of his superior abilities,—and I am sure that he will find us an attentive audience,—let him first look back to the noble founder of our Society, and copy him as an example, for he will not find amongst his correspondence such extreme language as he makes use of, —for Jacob Bell was a pattern of toleration and large-mindedness,—and then let Mr. Giles come down from that aerial pinnacle from which he addresses us, and upon which, by fortuitous circumstances in which he has taken but a small part, he has been enabled to place himself; let him come amongst us and ascertain our besetments, and I doubt not that he will modify his opinion. One thing is certain, that if homœopathy be destined to advance, and it certainly is gaining ground, the united opposition of the whole of the pharmacists in the country could not check it, for the motive of our opposition would be too apparent. For my own part, I am of opinion that if we did not think so much about it, we should not feel it affect us. I have not written with the view of raising a controversy, for I am Mr. Giles's junior, and I admit my inferiority in ability; and if he had written in a spirit of moderation and forbearance, no one would have paid a greater deference to his opinion than myself; but, if he pleases to address his brother pharmacists in such extreme language upon a topic respecting which I am glad to see that you, Sir, differ from him in some points, he cannot but expect strong language in reply.

I beg to remain, Sir,
Yours most respectfully,
Jas. Swenden.

Darlington, April 9th, 1870.

Sir,—Having read Mr. Giles's tirade against chemists who sell homœopathic medicines, I should feel obliged if you would insert this letter on the other side of the question. Has he not somewhat overstepped the bounds of prudence? I presume he objects to the sale of homœopathic medicines because they are "shams," and I must say I think for another reason also, viz. because homœopathy is opposed to allopathy. However, "Honi soit qui mal y pense."

He objects then to the sale of homœopathic medicines because they are shams. I challenge him to prove it. I have not the least doubt that if a person went into Mr. Giles's shop, and asked for a box of Morrison's Pills (Nos. 1 or 2), or Parr's *Life* (?) Pills, he would be able to have them. Does Mr. Giles believe in them, and the host of other quack medicines that are daily advertised to cure all the "ills that flesh is heir to"? Surely he must. Does he not sell them? And of course he would not sell anything that is a "sham," for "is not Brutus an honourable man?" How can he condemn the sale of homœopathic medicines by chemists as a "reprehensible practice," while, at the same time, he sells allopathic medicines that are as great or greater shams? And he must look at all these "cure-alls" as nothing less than shams. Let me remind Mr. Giles that chemists do not sell homœopathic medicines as "a department of pharmacy," any more than he sells Morrison's Pills as such. They (the chemists) sell the one just in the same way as the other, viz. to oblige, and for the convenience of, their customers. If a person asked a chemist to prescribe something for some little ailment, he would not recommend or give homœopathic, but would prescribe the usual remedies. Therefore, to quote Mr. Giles, we "may not unreasonably suppose that the pharmaceutist who humbugs one customer *with* his consent" (to wit, selling Morrison's Pills and the like) "may humbug the rest for his own profit." In another place he says, "Like all other things, it must ultimately stand or fall by its merits, for fashions do not last long, and we can easily estimate its prospects of permanence on that score." Here I agree with him; it must stand or fall by its merits, and I say that it has stood by its merits, and not only so, but continues to stand and gain ground steadily. And it has done so for nearly half a century or more. It is not only gaining ground with the people, but with the medical profession also. Certainly fashions do not last long, seeing that almost every month gives rise to a new one of one kind or another. Therefore, I say that homœopathy is not merely a fashion or a sham; and I think Mr. Giles will not be able to "estimate its prospects of permanence on that score." However, as he says he can, and that easily, I hope he will favour us with *his* estimate. Again, he says, "But when we proclaim ourselves ready to traffic in truth or error with equal alacrity, provided only that we put money in our purse, we cannot make shams real, but we do give such an air of unreality to the whole, that the world may well doubt if it be anything more than a seriously-played farce, got up for the benefit of the actors and the mystification of the beholders."

The above are certainly very strong terms to use, but, I think, they apply equally well to Mr. Giles as to those he is condemning. Does he not "humbug" his customer by consenting to supply him with Morrison's Pills, *knowing* them to be a quackery and a sham? Therefore we could not be surprised if Mr. Giles were to supply "cheap powdered slate for costly scammony." Such reasoning is as applicable to the vendor of allopathic "shams" as Mr. G.'s reasoning is to those who sell homœopathic medicines.

He says, too, that he *thinks* he knows instances where physicians or patients in search of reliable allopathic remedies prefer to seek them where these handy-dandy pranks are not played. What a pity it is he is not *certain* he knows of such instances, rather than *thinks* he does!

I notice a letter from another correspondent, signed "A. P. S.," on the too prevalent system of undercharging by chemists, who in this manner try to draw away customers from, in many cases, their more worthy brethren.

Truly he must be a "cutter" who would charge 1*s.* 5*d.* for 20 pills and ʒx mixture; and I should be inclined to doubt the quality of his drugs, especially the bismuth, and perhaps whether the full dose ordered was given.

"A. P. S." does not see that in condemning others he condemns himself, for he only charges 2*s.* 6*d.* If the customer were a "poor" one, then I think the Coventry chemist the more praiseworthy of the two; but I presume him to be a "respectable" one, and in that case "A. P. S." has followed the example set him at Coventry.

My experience of the charges in this neighbourhood leads me to state the price at not less than 3*s.*, and more likely 3*s.* 3*d.* or 3*s.* 6*d.*, viz. pills 1*s.*, mixture 2*s.*, 2*s.* 3*d.*, or 2*s.* 6*d.* I should say 3*s.* 3*d.* Truly "here are now examples of the undercharging of medicines, which has caused great annoyance to the trade;" and, with "A. P. S.," I hope the time will soon come "when the Society's Register will contain no such men as those I have alluded to" (viz. "A. P. S." and the Coventry chemist), who do so much injury to their fellow-tradesmen.

Apologising for thus intruding upon your space,

I remain, Sir, yours respectfully,

DEBFLA LLAHSRAM.

P.S.—It is not necessary to label the medicine "Poison." It should be entered in the Prescription Book.

Sir,—Permit me to thank you for your editorial remarks on chemists and druggists selling homœopathic medicines, etc., to which your attention had been called by Mr. Giles's letter.

After having for eight years dispensed allopathic prescriptions, and for fifteen years homœopathic prescriptions,—and also, having had considerable experience in the preparation of the remedies employed in both,—I am sure an educated chemist need not sacrifice his self-respect or that of his *confrères* by preparing, dispensing, or retailing the homœopathic remedies. I have never hesitated to dispense the "placebos" prescribed either by the allopathic or the homœopathic practitioner; and, whatever may have been the amusement or the astonishment occasioned by them, I have never allowed my own opinions to induce me to depart from the strictest integrity in their preparation.

If allopathic and homœopathic doctors could agree to differ on the question of a therapeutic law, misunderstandings and jealousies would cease, and obstacles would no longer be placed in the way of chemists supplying to their customers whatever they require, within legal limits. If you would allow me to discuss this question in your pages with your respected correspondent, I think I shall be able to remove much of the misconception which exists about it, most of which is traceable to misstatements as to the *bonâ-fide* preparation of the homœopathic medicines, some persons asserting that they are inert, and others that they are dangerous poisons under disguise.

If I had been requested to dispense the prescription to which you made reference, I should have mixed the globule with a few grains of sacch. lactis, and reduced it to a uniform powder in a mortar. If, as is usual, the prescription was written in Latin, with the signs and abbreviations common to both schools of medicine, will you allow me to suggest that it probably was written without any intention to deceive the patient, or that it should be dispensed in the manner stated? The division of globules into two or more doses is not an infrequent occurrence; but it is usual to direct them to be dissolved in water, as in the following formula:—

℞. Bryoniæ Alb. 1§ ·
Aquæ destill. ℥vj. M.
Ft. mist. Capiat Cochl. mag. i ter die.

I am, yours respectfully,
John Parton Berry, M.R.C.V.S.,
Registered Chemist and Druggist.
Northampton, April 14th, 1870.

The Examinations of the Pharmaceutical Society.

Sir,—I beg to call your attention to a few points of inconsistency in the carrying on of these examinations, which all well-wishers to the cause will gladly hail the removal of.

First, with regard to the so-called Preliminary Examination: in this the exercise of the greatest amount of care is needed to show that the promoters of the Pharmacy Act, 1868, were really anxious to do what they then pretended, viz. to respect vested interests, their Bill assuring that all persons having been connected with the trade for a period of not less than two years were entitled to respect. Not being able, however, to carry the measure in this form, a clause was inserted to the effect that all persons not actually engaged at that time in the business on their own account, or not having been so previously, must be subjected to some examination before being registered. Now, in the case of those who had arrived at the age of twenty-one years at the time of the passing of the Act, this examination was modified, provided they had been in the business not less than three years; this was only right, and was the first step the Society made to carry out the recognition of vested interests as far as lay in their power. But here also is where the first great mistake begins to which I before gave the name of inconsistency.

Next to these come a class of young men equally entitled to respect on account of the length of time they have been engaged in business; and not only so, but the analogy that exists between the two classes.

I refer to those who, at the time of the passing of the Act, were within a few months, perhaps, of the required age, some of whom were then actually engaged as assistants; and this class numbers not a few, it being a very common thing in some houses for a young man to be loose of his apprenticeship at the age of 20, whilst there are others who take apprentices for a term of years irrespective of age. These are the people who, in fact, feel the full force of the law, and whose cases call for our sympathy and consideration, because whilst their opportunities of acquiring the classical, and I might say "theoretical," part were certainly not greater than those of the class just referred to (so much importance not having been attached to a lad's having a knowledge of Latin grammar and the first book of Cæsar some eight or ten years ago as now), they are subjected to a severe and elaborate classical examination, going as far into grammar as the rules of syntax, if we are to take the papers of the last Preliminary Examination as a sample. I say difficult, because it really is so to persons with such opportunities only having been afforded them; whilst the Modified men, with the same opportunities, are supposed to be eligible for exemption on that account.

Surely this is miserably inconsistent on the part of the Examiners; the remedy, however, is in their own hands, if they wish to apply it, and carry out in practice what they, as promoters of the Act, proposed to. If this Preliminary Examination is to be imposed upon this class of young men, then let us have it, for some time to come, of a simple character, so that any young man may easily get through with a fair amount of effort. Although not previously a Latin scholar, his "Minor" will give him a practical test, the same as the Modified does the other class. Or, if that would not be advisable, on acount of the apprentices just entering the profession, who, according to the present state of things, are placed on a better footing than those who, it must be acknowledged, have some vested interest, let us then have a separate examination for those whom we know by their age must have been three years previously employed in it.

Again: let us endeavour to encourage rather than deter our young men from coming up to this Examination, by having one each month preceding the "Minor" examination, so that no unnecessary time, and consequently money, shall be lost by their having to wait a month for the result of this Preliminary examination before they can go in for the Minor. There is one other subject to which I wish to draw the attention of the Council before closing, which is this. One hears it commonly stated of late that the Major examination has recently undergone great changes; that it has been made much more difficult since the Society has got the new Act than when all its examinations were voluntary; that more profound theory has been introduced, more elaborate chemistry, which, it is urged, is of no practical use. This, if true, is a great mistake on the part of the Examiners, as it not only leaves the integrity of the founders of the Society open to ridicule, there always being to be found members of the kindred professions who would in such a case readily throw out the insinuation that the operations and examinations of the Society prior to the passing of the Act were all "sham," but it also deters many of our young men from attempting anything further than the "Minor," the passing of which registers them as chemists and druggists, and terminates their connection with the Society. And to the sensible mind it must occur that we cannot, even with our extended powers, afford to lose these persons, if the Society is to prosper and increase; the fees which are compulsory would not be sufficient to support the Society in future years. And what if they were? We could not expect great success from such sources. What we want is to keep this examination a practical, moderate one,—an extension simply of the Minor as heretofore, so that we may induce our young men to become pharmaceutical chemists, to continue to take an interest in and to labour for the Society cheerfully through life; so that, as office after office becomes vacant, we may have right material to supply the deficiency.

Carry out the Divine law of helping one another, and by so doing we shall find we have not only a better and more flourishing Society, but a better race of chemists upon the whole, and not one highly scientific man here and there and a host of indifferent ones. A friend of mine, who was one of the founders of the Society, joins me in my views, which I hope will incite the Council to investigate the affair, so as to make it as efficient as possible. In the meantime, Sir, I will subscribe myself

ONE WHO PASSED HIS EXAMINATION
WHEN IT WAS VOLUNTARY.

UNIFORMITY OF PRICES.

Sir,—As a member of our Society, I beg to complain through the Journal on two subjects, which I should think other members will agree with me as annoying to us as matters of business. In the first place I regret there is no *uniformity* in our charges for dispensing medicine. This is really a matter of considerable importance to us, though the charges, I am aware, cannot altogether be regulated, only *approximately*. But when mixtures, pills, etc., can be had at respectable houses for prices differing so considerably from what they were supplied at regular trade prices, it is very perplexing and vexatious to see the trade cut to pieces as it is, and I think reflects discredit on those who dispense medicines at almost the mere cost of the drugs.

The other matter I complain of is the system of physicians writing their prescriptions in English, so that they can be obtained at the cheapest possible charges. This practice, adopted now frequently, I consider quite *unprofessional*, and preventing us, as dispensers, obtaining our fair profit in business.

I do not know whether these matters will get regulated, at least the first, having a scale laid down for our adoption. As to the second, all we can expect and hope to be done must rest with the profession; their own good sense, I trust, will suggest to them the propriety of writing prescriptions as formerly, which will tend to their honour and the advantage of those who have to live by their business.

I am, Sir, yours truly,
M. R. S.

April 22nd.

Dear Sir,—Through the medium of your valuable Journal the voice of a Barnsley chemist craves the hearing of a few members of our noble body. In this town, with a very large population, we have always been behindhand in almost everything, but more particularly in our own branch of business. Were some of our pharmaceutical friends to come and stroll through the town, taking a survey of the chemists' shops, they would be utterly astounded; the windows of some are devoted to the display of scarcely anything but pipes and tobacco. One is very conspicuous as the "Worsted Repository," and nowhere is that air of genteel respectability to be seen which I contend is not only desirable, but actually necessary, for the maintenance of the status in which we have been placed. I would suggest that we, as a body of chemists in this town, should adopt the motto of our worthy corporation (for at last we can boast of such an august institution), which is "Spectemur Agendo." In the first place, then, as we do not seem equal to the task of making a start in the way of improvement, I, for one, should be glad if any of our brethren would devise an easy method whereby we could commence the "serious difficulty." In the second place, I would apply our corporate words, "Spectemur Agendo," to ourselves as members of one common body (and that one the Pharmaceutical Society of Great Britain), and ask the question, Is it necessary that our young men should undergo the ordeal of examination, also the expense of the same, to be enabled to compound medicines—at the undermentioned rate, to wit?

On April 11th a prescription was brought to me to be made up very quickly; accordingly it was attended to at once, which being done, I was thoroughly astonished when, on naming my price, I was told that Mr. —— charged much less. Being challenged so unreservedly, I thought there would be no impropriety in asking how much Mr. —— charged. An answer was at once vouched, which quite took me by surprise. The prescription I will give here.

R. Sodæ Carb. ʒij
Infus. Gent. Oss
Tinct. Rhei Co. ℥vj
Sp. Ammon. Arom. ʒiij
℥i bis die.
R. Pil. Hydrarg. gr. iij.
h. s. cap.
A. Ch.

My price was 1*s*. 6*d*., which I consider not at all too much; but the patient did, as she could get it compounded by one of the oldest firms in the town for 1*s*. 2*d*., which I think must have been thoroughly dissected into the following rates:—

Soda ½*d*., gentian 3*d*., rhubarb 3*d*., sal volatile 2*d*., bottle and labels 1½*d*., pill 1*d*., knowledge required for the same 3*d*.; grand total, 1*s*. 2*d*.

Hoping you will insert this in your next issue, and pardon me for trespassing so much on your space,

I remain, dear Sir, yours truly,
"Spes."

The Benevolent Fund.

Sir,—I send you a copy of an appeal made to the Hull chemists on behalf of the Benevolent Fund of the Pharmaceutical Society, and also a list of subscribers (see page 783) to show the result. I shall be glad if you can find room in your Journal for it, in hopes that others, who have not already done so, may be induced to give, and also to stimulate chemists in other towns to do likewise.

I may mention that there are a few more names of chemists in Hull not down on this list who give freely to the Fund.

I am, Sir, yours respectfully,
Francis Earle.

Hull, April, 1870.

The following is the appeal referred to by Mr. Earle:—

"Dear Sir,—I have the pleasure of sending you a few remarks made by Mr. Bell, at the Annual Dinner of the Hull Chemists' Association, advocating the more general contribution to the Benevolent Fund of the Pharmaceutical Society, and trust it will meet with your hearty support.

"I purpose calling, or sending some one to call, upon every chemist in the town; but those outside will kindly oblige by sending their subscriptions to me as early as convenient.—Yours faithfully, F. Earle.

"*Hull, January* 15*th*, 1870."

"Hull Chemists' Association.—The Annual Dinner of the Association was held at the Cross Keys Hotel, on Thursday, the 25th of November, 1869; Mr. Anthony Smith in the chair (in the unavoidable absence of the President, Mr. Baynes), when a room full of chemists met and spent a very pleasant evening. After the usual loyal and other toasts, the Honorary Secretary, Mr. Bell, and others, pleaded for the better and more general support of the Benevolent Fund of the Pharmaceutical Society, observing that as the Fund was accessible to every member of the trade, and that any chemists, who through ill health or other unforeseen circumstances, might become the recipient of it, it was the duty of every chemist when in health and prosperity to remember, in a substantial manner, that all were not equally fortunate, and subscribe something every year, be it ever so little, to make this Fund a source of pride to those whose hearts are large enough to support it, and a comfort to those who needed its assistance."

Sale of Poisons.

Sir,—I wish to make a suggestion to my fellow-members with respect to the sale of poisons for destroying the larger animals, such as cats, dogs, foxes, etc.

I would recommend that, for the purposes above mentioned, always to refuse the sale of dangerous poisons, as there need be no difficulty in destroying the lives of such creatures whilst we have powder and shot at hand, or a person can be found who will, for a trifling consideration, dispatch the offender; and the practice, if adopted, might prevent many of those secret assassinations, which many persons have felt keenly in the loss of favourite animals.

But the unfortunate case which has recently occurred near this town, where a lady, probably under the influence of delirium tremens, got up in the night and swallowed a dose of poison intended for a dog, to my mind forcibly illustrated the danger of the practice (of selling the public deadly doses of poison), and also the wisdom of my suggestion.

I am, Sir, your obedient servant,
Joseph Lucas.

4, *Colmore Row, Birmingham*,
April 9, 1870.

Local Societies.

Sir,—I was in Brighton four days last week, searching for a chemist's business for a cash client of mine who wants one by the sea.

There are seventy chemists' shops in Brighton, several equal to the best in London, and all seem to be doing well. It was told to me with *regret* that there was no "Chemists' Local Association" at the present moment in such a large and important town as this "queen of watering-places," and that there was locked up the nucleus of a pharmaceutical library, etc., of no use to any one. A society did at one time exist, and was supported by such men as Messrs. Noakes, G. Watkin, Cornish, Savage, Brew, etc. An institution in the town supplied a room to meet in, and things flourished for a while. I think such societies of the greatest importance to our young and rising chemists. They produce a good feeling, stir up the zeal and energy of our young men in their noble and arduous pursuits, and are the nurseries of our future great chemists. A little fresh and young blood is all that is needed to resuscitate the local society in Brighton, and make it of advantage to the surrounding county too. One or two spirited men in the town can do it, and help on a great cause. Another suggestion was also thrown out to me, viz. that many men in Brighton wanted a few weeks' holiday in the course of the year, and a *roving* "locum tenens" might find profitable employment, and in turn supply the places of those men taking a holiday.

As the 'Pharmaceutical Journal' circulates far and wide, and I meet with it in my journeys in France, Scotland, and most parts of England, I have thought it the best medium to ventilate these ideas, as other towns may be similarly situated; and as our object is for the good of the whole body, perhaps you will kindly publish these hints, and oblige,

Dear Sir, yours truly,
G. Scott.

46, Great Coram St., Russell Sq., W.C.,
April 20th, 1870.

The Microcosm.

Sir,—Your correspondent "R. W." (Wisbeach), and probably some other of your readers, would, I think, be amused by the following absurd amplification of the microcosmic idea, copied from a little old-world book, entitled 'Perspicillum Microcosmologicum; or, a Prospective for the Discovery of the Lesser World, wherein Man is in a Compendium; Theologically, Philosophically, and Anatomically described, and compared with the Universe. To the end that Men may understand that Self-knowledge is delightful and *necessary to be enquired* after. London: Printed by F. G. for Nath. Brook, at the Angell, in Cornhill. 1656.'

The author is W. Coles, whose treatise on the 'Art of Simpling' precedes, in the volume, the work in question.

The gentle reader is, in the preface, advised that the object of the work is to conduce to "a knowledge of ones selfe and thus to know God the better, he being to be known as by the book of Scripture so by the book of the Creatures also."

In the first chapter the author bewails that "Satan, that arch Politician and grand Enemy of Mankinde, should by his subtill impostures so blind the understanding, that it chooses rather to wear out it selfe in studying the knowledge of the *Celestriall* and *Terrestriall* Globes then ever to remember the most necessary Study of all, the study of it selfe." The dignity of man is next strongly asserted, and reference made to the terms in which his attributes have been epitomized by early writers, such as the "*Royall Temple* and *Image of God*," "the Measure and Rule of all Bodies," "the Abstract, Modell, and briefe story of the Universe," "the *Utriusque Naturæ vinculum*," "the terrestriall transitory God," the "*Microcosme* or little World." This last is justified by the consideration that "first we are a rude Masse, and only in the rank of Creatures, which *only are*, and have a dull kind of being, not yet privileged with Life or preferred to Sense or Reason; then we live the life of Plants, then the life of Beasts, then the life of Men, and at last the life of Spirits." The anatomy of the soul that follows is of a kind that no fellow can be expected to understand, and, being also excessively dry, I omit further reference to it.

When, however, our author comes to treat of the cosmical analogies of man's body, he must at least be confessed to be both ingenious and entertaining.

He first takes the division of the world into three parts—the uppermost, middlemost, and lowermost—as taught by the Egyptian priests, and shows "how fitly and elegantly these three parts may be applyed to the Body of Man."

"The Head, which is the Fort of Mans minde, the Seat of Reason, the Place of Wisdome, the Shop of Memory, Judgement, and Contemplation, doth aptly resemble the highest and Angelical part.

"The middest and Heavenly Region is lively expressed in the Breast or middle Region of a Man,"—chiefly, it seems, because "the Sunne is the Heart of the World, and the Heart the Sunne of Man."

"And who doth not see the lower part of the World expressed in the lower Region of Man?" Who doth not indeed, when informed "that in it the parts which are for Nutrition, Digestion, and Procreation are contained, so that we need not stand longer to prove that all things are found in the body of Man, which are in the whole Universe?"

Descending now to particulars, he invites you to "behold the other Planets in the little World of Man. The flowing marrow of the brain doth resemble the moist vertue of the Moon. The Genitalls supply the place of *Venus*. The Instruments of Eloquence doe represent the various Nature of ingenious *Mercury*. The Liver, which is the fountaine of Blood, is rightly compared to liberall and bountiful *Jupiter*. The Bladder of Gall containes in it the heat and fury of *Mars*. The flaggy flesh of the Milt, being the receptacle of the Melancholy humour, doth very well resemble the cold and malevolent Planet of *Saturn*." He "passes by with silence the twelve signes of the Zodiack, elegantly pourtrayed in Mans body, for those things are old and common," and proceeds to develope, in a manner doubtless strictly original, "the Meteorology of the *Microcosme*."

"Do but see the Meteors of the *Microcosme!* The fiery rednesse of sore Eyes doth represent the Lightning, and so doth the brightnesse that shines from thence. The noises, murmurings, roarings of the Guts, belchings, and other crackings, are not unlike to Thunder. The tinkling and singing of the Eares doe prognosticate the invasive blasts and turbulent tempests of the Winde. The Distillations that flow up and down the Jawes, Throat, and Breast are to be likened to raine. The round dots which are spit out of the mouth, doe bear the similitude of haile. Teares are compared to the dew. Mines are found in our bodies, out of which Metals and Stones doe come, not to build up, but to dissolve our Earthly Tabernacles. Therefore the Stones of the Reines and Bladder doe carry along with them the similitudes of subterranean Stones and Mineralls:"

Having thus picked out some of the absurdities of our author, it would, I think, be but fair to state that his descriptions of the several organs of the body are by no means badly done, and allow him to conclude his work in his own way, which he does wisely and well in this fashion:—

"Some have admired the Labyrinth of *Dædalus*, others the Pyramids of *Egypt* and the tomb of the Mausoleum; but if a man doe but consider the Labyrinths that be about himselfe, he will be forced to cry out with the Apostle, *O the height, breadth, and depth of the infinite Wisdome of God, whose wayes are unsearchable and past finding out in the little World of Man!*

"Let us therefore, notwithstanding the saying of *Pythagoras*,—Finis Philosophiæ est nihil admirari,—and especially Philosophers, learne to admire our Creator, and not only to admire him, but adore him, who with his Sonne, and the Holy Spirit, liveth and reigneth one God, world without end. *Amen.*"

THOMAS B. GROVES.

Weymouth.

THE EXAMINATION AND SALE OF PETROLEUM AND BENZOLE.

Sir,—Recent writers on this subject in your Journal do not seem to be aware that their recommendations respecting the importance of legally fixing the length of time to be occupied in testing petroleum were anticipated in the schedule of the Petroleum Bill of last session—a Bill that will doubtless, sooner or later, be reintroduced in an improved form. With regard to the omission of this point in the schedule of the present Petroleum Act, reference to the 'Votes and Proceedings of the House of Commons" will show that the method of testing proposed by the chemists who were consulted by the Government was not adopted in its entirety, hence subsequent difficulties. It is to be regretted that scientific advice was not taken on the Act itself; its vexatious, though evidently unintended, interference with chemists and druggists would then have been foreseen and avoided.

I am, etc.,

JOHN ATTFIELD.

WHAT IS THE SPECIFIC GRAVITY OF TINCTURA FERRI PERCHLORIDI?

Sir,—In the course of an inquiry I was pursuing, I was led to determine the specific gravity of tinct. ferri perchloridi, and found it to be ·9771 instead of ·992, as given in the Pharmacopœia, and repeated by Mr. Squire with an amendment. As the number given in the Pharmacopœia is so far from what is correct, and may involve an honest man in trouble, and allows a less scrupulous one an advantage, I think you will agree with me that it ought to be recorded.

I am, Sir, yours respectfully,

F. M. RIMMINGTON.

Bradford, April 22nd, 1870.

EXTRACTUM ERGOTÆ LIQUIDUM AND EMPLASTRUM BELLADONNÆ.

Dear Sir,—I see by the report of last Pharmaceutical Meeting you expressed surprise that you had not had some suggestions or statements of practical results on the preparation of extractum ergotæ liquidum, and asked for experience on the question. I have had considerable practice in this preparation, a large quantity being used by the medical men in the neighbourhood for tic and neuralgic pains, with marked success.

About twelve months ago my attention was drawn to the fact of it not being necessary to get rid of the oil and of ether. I was asked for a sample of the oil of ergot, and, not having any reserved, I made some from the marc used for tincture, which suggested to me the idea that it was not necessary to displace the oil with ether first. I argued that if it was not soluble in proof spirit, it would not be dissolved by water; so I tried the experiment, and found I could get as good results without as with, and thus get over the trouble of drawing off the ether and cleaning a retort, which I had previously found troublesome; the oil of ergot is not easily removed with potash. The only thing requiring care is not to overheat the ergot in the water, as it forms a thick solution bad to filter, on account (I should think) of starchy matter. I always macerate in a water-bath, and never have any trouble, and invariably get good results. I usually operate upon from 1 to 3 lbs.

With reference to emplast. belladonnæ, I consider the B. P. preparation very superior to the old one; and I think the notion of the difficulty of getting rid of the spirit rather imaginary. Among the points deserving consideration, are those of the uncertainty of the result and the price. As will be seen by the laboratory memoranda given below, I cannot make it under 10*s*. 6*d*. per lb., and it is regularly quoted in London drug circulars at 5*s*. 4*d*., which is a considerable discrepancy. I think the quantity of spirit insufficient to exhaust the belladonna extract. The inconvenience said to result from its being of too soft a character may be got over by the use of an adhesive margin, which was also required for the old preparation, or it would not stick.

LAB. MEM. No. 1.

Ext. Belladon. ℥iij	1*s*. 10*d*.
Sp. Vini Rect. (loss)	4*d*.
Emp. Resinæ ℥iij	2*d*.

Result of this was 3 oz. and 4 drs. of plaster, costing 2*s*. 4*d*.

LAB. MEM. No. 2.

Ext. Belladon. ℥iij	1*s*. 10*d*.
Sp. Vini Rect. (loss)	4*d*.
Emp. Resinæ ℥iij	2*d*.

Result of this was 3 oz. and 6 drs. of plaster, costing 2*s*. 4*d*.

LAB. MEM. No. 3.

Based on the former two.

Fol. Belladon. Hss	8*d*.
Sp. Vini Rect. (loss)	1*s*. 0*d*.
Emp. Resinæ ℥iij	2*d*.

The amount of alcoholic extract in this case was 6¼ drs., and that of the plaster 3 oz. and 6 drs., costing 1*s*. 10*d*.

LAB. MEM. No. 4.

Based on Nos. 1, 2, and 3.

Ext. Belladon. Alcoholic. ʒv	10*d*.
Emp. Resinæ ℥iij	2*d*.

Result 3 oz. and 5 drs. plaster, costing 1*s*.

The calculation of results does not allow for waste in adding the extract to the plaster, but it would affect all in the same ratio.

Yours most respectfully,
THOMAS W. ROMANS.

55, Westgate, Wakefield,
April 11th, 1860.

PULVIS CRETÆ AROMATICUS.

Sir,—It has more than once been a subject of remark that so large a quantity of a costly and inert drug like saffron is ordered in several preparations of the British Pharmacopœia. Perhaps the most extreme case is that of pulv. cretæ aromat. Any who will take the trouble to price out the quantities ordered in the Pharmacopœia will find that the preparation costs about 5*s*. per lb., of which the colouring matter alone, at its present price, 3*s*. 9*d*. to 4*s*. per oz., costs about four-fifths. Such figures speak for themselves, and I think afford good ground for consideration whether a smaller proportion of saffron will not produce a sufficiently rich colour.

C. EVE.

Hampstead, April 21st, 1870.

PRESERVATION OF EGGS.

Sir,—Having been consulted on the subject of egg preservation by a large dealer, I should be glad to receive information as to the following particulars:—

1. Is there a better process for preserving hens' eggs than the old-fashioned one of sinking them in thick lime-water?

2. The lime process keeps the eggs sweet, but renders the shells more fragile. Is there any method of obviating this?

3. Have any of your correspondents tried the salt and water process, or that where the eggs are boiled for half a minute before putting in a preservative solution? And, if so, with what results?

4. Have any investigated the whole subject, and, if they have, what is their conclusion as to the most useful method to be adopted on a large scale?

5. Is the addition of a freezing mixture to the lime and water of any benefit in hardening the shell?

With regard to the last point, such freezing mixtures would have to be cheap, and would mostly contain sal ammoniac, which is decomposed by lime; and, speaking off-hand, I don't think such an addition would do any good.

I shall be obliged by any communications.

Yours truly,
B. SHAW.

Exchange Buildings, Halifax,
April 19th, 1870.

A correspondent sends the following formula for liquor carbonis detergens:—

℞. Bruised bark of Quillaya Saponaria, 4 lbs.
Sp. Wine Meth. 65 per cent., 2 galls.

Heat to ebullition, and macerate for some days in a sand or water bath.

This tincture is then used for the preparation of saponified coal tar.

℞. Coal Tar, ℥xxxij
Alcoholic Tinct. Saponaria, as above, ℥lxxvj.

Digest eight days in a water or sand bath at a moderate temperature, occasionally stirring the mixture, and filter for use.

A. P. S. (17, Bloomsbury Square) wishes for a good form for marking ink that will keep crimson.

"*Justitia*" complains of the delay that has occurred in announcing the results of the Preliminary Examination to the candidates. We understand this will not occur in future.

J. S. E.—Methylated spirit, mixed with an equal volume of wood naphtha, may be sold by those who have a licence.

J. S. S. would, we believe, have no difficulty in getting hydrometers, and also thermometers, that would answer his purpose, at either of the houses named, but those that are delicate in their indications cannot be of long range. (2.) Yes.

"*A Disgusted Chemist and Druggist.*"—The practice complained of is much to be deplored.

H. L. J.—In the formula referred to, the quantity of wine intended is probably one ounce, but it seems impossible to make a good emulsion from the proportions indicated.

C. J. C. (Greenwich).—(1.) *Convallaria Polygonatum.* (2.) *Actæa;* see Vol. II. (N.S.) p. 460.

F. C. (Congleton).—"*Tinctura Podophylli.*" We know of no formula for this tincture. A tincture of *podophyllin* is made in the proportion of 3 grains of the resin to one drachm of rectified spirit.

G. W. (Dorset) should apply by letter to the Secretary, 17, Bloomsbury Square.

T. E. wishes for a formula for "brilliantine."

J. B. (Driffield).—Yes.

"*Kappa*" (Lee).—"*Metric System of Weights and Measures.*" Such a knowledge as would be required in dispensing a prescription written according to that system.

Mr. T. Stokoe (Clare), with reference to the difficulty sometimes felt in labelling some of the preparations of opium, suggests the use of the following label:—"Poison, if taken in improper quantity."

J. W. (Sheffield) should apply, by letter, to the Secretary.

A. T. (Carlisle).—*Syrup of Bromide of Iron.* Take of—

Bromine, 1000 grains.
Iron, 500 grains.
White Sugar, 8 ounces.
Distilled Water, 3000 grains.
Simple Syrup to 40 fluid ounces.

Ginger Beer, by Fermentation.—At the request of a correspondent we insert the following. Take of—

Refined Sugar, 3 pounds.
Bruised Ginger, 2 ounces.
Cream of Tartar, 1 ounce.
Lemons, sliced, 4.
Boiling Water, 4 gallons.
Yeast, 8 ounces.

Pour the water on the first four ingredients, and infuse for two hours; then strain, add the yeast, and when fermentation has continued for a few hours, put it into stone bottles and secure down the corks.

F. O.—Black oxide of manganese (manganic oxide), when heated alone, for the purpose of obtaining oxygen gas, yields one-third of its oxygen, $3\,(MnO_2)$, giving $Mn_3O_4 + O_2$. When heated with sulphuric acid, the same oxide yields one-half of its oxygen as gas, $3\,(MnO_2) + 3\,(H_2SO_4)$ giving $3\,(MnSO_4) + 3\,(H_2O) + O_3$. Therefore, from a given weight of manganic oxide, half as much more of oxygen may be obtained by heating it with sulphuric acid than by heating it alone.

A. B. (Streatham).—(A.) *Phosphorus Pills.* Vol. VII. (N.S.), p. 615. (B.) From the absorption of carbonic acid. (C.) If any change takes place, it would probably be one of oxidation.

M. H. (Southampton).—So much has appeared in this Journal on the subject of chlorodyne, that we must leave our readers to judge for themselves as to the relative value of the different formulæ given.

A. P. S. (Wellingborough).—We imagine that the order to make the mixture referred to with infusion of calumba must have been subsequent to the writing of the original prescription.

"*A Country Chemist.*"—*Ol. Pini Sylvestris.* Identical with "Fir-wool Oil."

G. E. C. wishes for a formula for "Blair's Gout Pills."

H. O. W. (Wakefield).—The new Homœopathic Pharmacopœia is now in course of publication by the British Homœopathic Society.

J. C. (Newcastle).—Oliver's 'Elementary Botany' (Macmillan and Co.).

ERRATUM.—The reply to "W. L. G." in our last number, page 664, was not strictly correct, and applies only to old members. *Every* member is not of necessity a Pharmaceutical Chemist.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to ELIAS BREMRIDGE, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Wanted, the 'Pharmaceutical Journal' for January, February, and March, 1870. Full price will be given.

Advertisements (not later than the 23rd) to Messrs. CHURCHILL, New Burlington Street, London, W.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. XII.—JUNE, 1870.

THE ANNIVERSARY MEETING.

The Anniversary Meeting of the Pharmaceutical Society, a full report of which will be found in another part of this Journal, has been distinguished from all its predecessors in several respects. The attendance at this meeting has been more numerous, and the proportion of country members greater, than on any former occasion; moreover, the expression of opinion has been more decided and less deferential to those whose judgment has hitherto exerted an important influence upon the decisions arrived at than has usually been the case on such occasions. These are results that might have been anticipated from the altered circumstances of the Society,—the enlarged boundary within which it is now comprised, the new element included in its composition, and the increased powers conferred upon its members,—as well as from the interesting nature of the subjects to be discussed, and the importance of some of them as affecting the occupations of those who were called upon for their decision. It was not expected that great unanimity would characterize the proceedings at this meeting, and in this respect the result has fully justified the anticipation. The discussions that had previously taken place throughout the country with reference to the proposed regulations for storing poisons had manifested so decided an opposition to the course recommended by the Council, that nothing short of a strong expression of dissent on this point was looked for. Fortunately, this has not been carried to the extent of rejecting and wholly dismissing the subject. We are strongly of opinion that the recommendation of the Council might not only have been safely adopted, without entailing any hardship or undue inconvenience upon those who would have been affected by it, but that such a course would have placed the whole body of chemists and druggists in a much safer position than they will otherwise occupy, have raised them in the public estimation, and have gone far to justify their claim to the power, and therefore the right, to organize such regulations as may be considered necessary for contributing to the safety of the public. That this subject should be fully and freely discussed at a general meeting of the Society, comprising influential members from all parts of the country, was what, we believe, was desired by even the most strenuous advocates for the proposed regulations; and in this they have been satisfied. That the opposition raised to the adoption of the regulations should be supported by a statement of good and sufficient grounds, if such should exist, for rejecting them, was also desired; but in this respect with a less satisfactory result. However, the subject is remitted to the new Council, and it will, no doubt, receive at their hands such a careful and impartial consideration, given to it under a sense of the responsibilities of office, as it may be hoped will issue in its final settlement in a manner satisfactory to all parties. There is, perhaps, a better chance of arriving at such a result through the instrumentality of the Council as now constituted than there was before, for the opposition to the proposed measure has originated almost entirely in the country, and among some of those country members whose influence has been rather strongly exerted in influencing the election of the new Council. And now that two-thirds of the members of Council have been drawn from the provinces, whatever conclusion they arrive at will at least be free from the objection previously urged, that London members were trying to impose regulations upon their country brethren which were unsuited to the circumstances of country trade. As already stated, the country was largely represented at the anniversary meeting, and the influence of provincial members proved successful in preventing the immediate recognition of a code of compulsory regulations for the storing of poisons. The members have thus exercised their power, and at the same time have committed the duties of office to men selected, no doubt, with some view to the settlement of this question. More able representatives certainly could not have been chosen, nor could the representative principle have been better or more fairly carried into effect, so as to give to all parts of the country a due amount of representation. The only question likely to arise is, whether the business of the Society, involving a great amount of committee work, can be efficiently conducted with so small a proportion of London members of Council. This is a question which a little experience will serve to elucidate, and, as bearing upon it, it may be found expedient to adopt some plan by which the members throughout the country may be enabled, in the selection of candidates, to maintain a due balance in the representation. The effect of local recommendation and influence has been very marked in the late election; and although in that case it has resulted in an unexceptionable choice, yet obviously it might not always be so.

If nothing less satisfactory than the discussions and decisions on subjects formally and legitimately brought before the meeting had occurred, the proceedings would not have left the painful impression, the sense of mortification and shame, which unfortunately too many who attended this anniversary meeting and its adjournments have carried away, and from which every right-minded man must desire to exonerate himself and those with whom he is associated.

A POISON BILL FOR IRELAND.

A Bill was introduced to Parliament by the Solicitor-General for Ireland, and read the first time on the 9th of May, the object of which was understood to be to establish a new system of pharmaceutical examination in Ireland, and to confine the sale of poisons to examined men, as well as to impose certain regulations on those who sell and dispense poisons. The second reading of that Bill was adjourned several times, and it was never published; at last, on the 24th of May, the order for the second reading was discharged and the Bill withdrawn, a new Bill being at the same time introduced of a much more simple nature. This new Bill is as follows:—

A Bill to Regulate the Sale of Poisons in Ireland.

Whereas it is expedient for the safety of the public that due provision should be made to regulate the sale of poisons in Ireland:

Be it enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. The several articles mentioned in the schedule A. to this Act annexed shall be deemed to be poisons within the meaning of this Act; and the Governor and Council of the Apothecaries' Hall of the City of Dublin may from time to time, by resolution, declare that any article other than those mentioned in the said schedule and in such resolution named ought to be deemed a poison within the meaning of this Act; and thereupon the said Council shall submit the said resolution for the approval of her Majesty's Privy Council in Ireland, and if such approval shall be given, then such resolution and approval shall be advertised in the 'Dublin Gazette;' and on the expiration of one month from such advertisement the article named in such resolution shall be deemed to be a poison within the meaning of this Act.

2. It shall be unlawful to sell any poison, either by wholesale or by retail, unless the box, bottle, vessel, wrapper, or cover in which such poison is contained be distinctly labelled with the name of the article, and the word "poison," and with the name and address of the seller of the poison; and it shall be unlawful to sell any of the poisons which are named in the first part of Schedule A. to this Act annexed, or which may hereafter be added thereto under section 1 of this Act, to any person unknown to the seller unless such person is introduced by some person known to the seller; and on every sale of any such article the seller shall, before delivery, make or cause to be made an entry in a book to be kept for that purpose, stating, in the form set forth in the schedule B. to this Act annexed, the date of the sale, the name and address of the purchaser, the name and quantity of the article sold, and the purpose for which it is stated by the purchaser to be required, to which entry the signature of the purchaser and of the person (if any) who introduced him shall be affixed; and any person selling poison otherwise than is herein provided shall be liable to a penalty not exceeding *five pounds* for the first offence, and to a penalty not exceeding *ten pounds* for the second or any subsequent offence; and for the purposes of this section the person on whose behalf any sale is made by any apprentice or servant shall be deemed to be the seller; but the provisions of this section which are solely applicable to poisons in the first part of the Schedule A. to this Act annexed, or which require that the name and address of the seller, shall not apply to articles to be exported from Ireland by wholesale dealers, nor to sales by wholesale to retail dealers in the ordinary course of wholesale dealing, nor shall any of the provisions of this section apply to any medicine supplied by a duly qualified apothecary, nor apply to any article when forming part of the ingredients of any medicine dispensed by a duly qualified apothecary, provided such medicine be labelled in the manner aforesaid with the name and address of the seller, and the ingredients thereof be entered with the name of the person to whom it is sold or delivered in a book to be kept by the seller for that purpose; and nothing in this Act contained shall repeal or affect any of the provisions of the Act of the fourteenth and fifteenth years of the reign of her present Majesty, intituled "An Act to regulate the sale of Arsenic."

3. The provisions of the Act of the twenty-third and twenty-fourth years of the reign of her present Majesty, intituled "An Act for preventing the Adulteration of Articles of Food or Drink," shall extend to all articles usually taken or sold as medicines, and every adulteration of any such article shall be deemed an admixture injurious to health.

4. Every penalty recoverable under the provisions of this Act shall be recoverable in a summary way, with respect to the police district of Dublin metropolis, subject and according to the provisions of any Act regulating the powers and duties of justices of the peace for such district, or of the police of such dis-

trict, and with respect to other parts of Ireland, before a justice or justices of the peace sitting in petty sessions, subject and according to the provisions of the Petty Sessions (Ireland) Act, 1851, and any Act amending the same, and shall be applied according to the provisions of the Fines Act (Ireland), 1851, or any Act amending the same.

SCHEDULE A.

PART I.

Arsenic, and its preparations.
Prussic acid, and its preparations.
Cyanides of potassium and all metallic cyanides, and preparations of any of the said cyanides.
Strychnine, and its preparations, all poisonous vegetable alkaloids and their salts.
Aconite, and its preparations.
Emetic tartar.
Corrosive sublimate.
Cantharides.
Savin, and its oil.
Ergot of rye, and its preparations.
Preparations of atropine.

PART II.

Oxalic acid.
Chloroform.
Belladonna, and its preparations.
Essential oil of almonds, unless deprived of its prussic acid.
Opium, and all preparations of opium or of poppies.
Preparations of corrosive sublimate.
Preparations of morphine.
Red oxide of mercury (commonly known as red precipitate of mercury).
Ammoniated mercury (commonly known as white precipitate of mercury.)
Every compound containing any of the poisons mentioned in this schedule, when prepared or sold for the destruction of vermin.
The tincture and all vesicating liquid preparations of cantharides.

SCHEDULE B.

Date.	Name of Purchaser.	Name and Quantity of Poison sold.	Purpose for which it is required.	Signature of Purchaser.	Signature of Person introducing Purchaser.

It will be seen that this Bill touches nothing more than the sale of poisons, of which a schedule is given, corresponding with the existing schedule in this country. The regulations under which these poisons may be sold or dispensed are similar to those of our Pharmacy Act, 1868, excepting that the "Governor and Council of the Apothecaries' Hall of Dublin" stand in the place of the Pharmaceutical Society of Great Britain, that no qualification is required on the part of those who merely sell poisons, and that duly qualified apothecaries only are now, as heretofore, allowed to dispense medicines, subject to the same regulations as in our Act apply to pharmaceutical chemists.

There are several points in connection with this Bill that call for serious consideration. The existing state of the law affecting the practice of pharmacy in Ireland is by no means satisfactory, and we do not conceive that the Bill now introduced will in any way remove the objections which have long been felt to the limitation of the right to dispense medicines in Ireland to apothecaries, while no qualification is required in those who sell poisons. The Bill first introduced, on the 9th of May, would, as it was understood, have gone to the root of the evil, and we should be glad to know why that Bill was withdrawn. Its title was a "Bill to Regulate the Sale of Poisons in Ireland, and to alter and amend an Act passed by the Parliament of Ireland in the thirty-first year of the reign of his Majesty King George the Third, chapter thirty-four, intituled 'An Act for more effectually preserving the health of his Majesty's subjects, for creating an Apothecaries' Hall in the City of Dublin, and regulating the profession of an Apothecary throughout the Kingdom of Ireland,'" ordered to be brought in by Mr. Solicitor-General for Ireland and Mr. Chichester Fortescue.

The Bill was read a second time on Thursday, the 26th, and ordered to be committed on Monday, the 30th of May.

In a supplementary number of this Journal which we shall have occasion to issue about the middle of this month, we purpose giving a copy of the Act referred to above, by which the Apothecaries' Hall of Dublin was established, and authority given to its Council to regulate the examination of apothecaries for Ireland.

"METHYLATED FINISH," ITS COMPOSITION AND THE REQUIREMENTS OF THE LAW WITH REFERENCE TO IT.

Most of our readers are aware that the term "methylated finish" is applied to a weak solution of shellac in methylated spirit, such a solution being used by French polishers for finishing off their work. If this solution be made in accordance with the regulations of the Board of Inland Revenue, it may be sold by retail without the seller being required to have a licence. Methylated finish is sometimes used for other purposes than those of the French polisher, as it is the most simple form in which chemists and others, not having a retail licence, can supply small quantities of duty-free or methylated spirit; and in these cases it is desirable to have as little of the shellac in it as the excise authorities will allow.

The regulations relating to the preparation and sale of methylated finish have been made from time to time by the Board of Inland Revenue, who require that the solution should be of at least a certain stipulated strength, so as to bring it under the definition of a manufactured article, which may then be sold by any person without a licence, while the spirit used in making it can only be sold by licensed dealers. In the first instance, the Board issued an "Order" to the effect that the solution must contain not less than three ounces of shellac or other resinous substance in every gallon to entitle it to the name of "finish;" but it was represented to the Board, that when made of this strength it was unsuited to some of the purposes for which it was required, and accordingly the strength was reduced to one ounce to the gallon. This latter order was issued in April, 1857, but the annual cost of a licence was then £2, and many chemists, finding that for some purposes the weak "finish," which required no licence, could be substituted for methylated spirit, sold only the former, and thus saved the expense of a licence. In 1867 another change was made, the cost of the licence being reduced to ten shillings; and the Board on this occasion, by a new "Order," required that methylated finish should be restored to the original strength of three ounces to the gallon. This is the regulation now in force, but we regret that this last Order, which was issued by the Board in August, 1867, and came into operation on the 1st of October, 1867, was not brought under our notice, so as to enable us to put it prominently before our readers.

Our attention has recently been directed to the subject in consequence of objections having been made by excise officers to many samples of methylated finish, which they have found to contain less of the resinous ingredient than the law requires. In thirteen samples of commercial finish, obtained from different localities, it has been found that only one contained the proper quantity of resin, while in twelve of them the quantity varied from 50 to 750 grains in the gallon.

It is important to observe that persons selling this illegal finish, without having a licence for the sale of methylated spirit, are liable to a penalty of £50.

There is reason to believe that a very large proportion of the methylated finish that has been supplied by manufacturers, and is now being sold by retail dealers throughout the country, is deficient in the amount of resin contained in it; and we recommend all those who are selling it without a licence to submit it to a simple test by which its composition may be determined. It may be subjected to a preliminary test by mixing it with about four times its bulk of water. If there be no precipitate or opalescence, it may be assumed that there is no resin present—that it is merely methylated spirit; if it becomes opalescent or there is only a slight precipitate, the quantity of resin is deficient; but if a white curdy precipitate is formed, it may be finish as defined by the excise, and this should be verified by evaporating to dryness a measured quantity, weighing the residue, and from it calculating the amount of resin in a gallon.

It will be understood, of course, that those who have a licence for the retail sale of methylated spirit need not attend to the instructions of the Board of Inland Revenue as to the composition of their finish; and, considering the small cost at which the licence is now supplied, and the advantage of being able to sell methylated spirit unmixed with resin, when required for burning or other purpose for which a resinous solution is not suited, it will perhaps, in most cases, be considered that the most advantageous and satisfactory method of meeting the difficulty we have alluded to will be to take out a licence.

OUR SUPPLEMENTARY NUMBER.

The large amount of space necessarily occupied in our present number by the official reports of the proceedings of the Society, has rendered it impossible to include much other matter that had been prepared for publication; and as a change will be made in the size and frequency of publication of this Journal after the present month, we purpose giving a supplementary number on the 15th of June, in which all matter standing over, together with the index, will be contained.

TRANSACTIONS
OF
THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *May 4th*, 1870.

MR. HENRY SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

MR. HASELDEN, VICE-PRESIDENT.

Present—Messrs. Abraham, Bottle, Bourdas, Carteighe, Edwards, Hills, Sandford, Savage, Squire, Stoddart, and Williams.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the Auditors nominated by the Council at their last meeting, were willing to accept office, if elected.

The report of the Finance and House Committee was presented, showing on the General Fund account a balance in the Treasurer's hands of £2098. 4*s.* 5*d.*, and submitting for payment accounts amounting to £751. 5*s.* 4*d.*; and on the Benevolent Fund account a balance of £409. 9*s.* 7*d.*

Resolved—That the report be received and adopted, and payments made.

The Report and Proceedings of the Library, Museum, and Laboratory Committee having been read, it was

Resolved—That it be received and adopted.

The Annual Report of the Council was read and, with some verbal alterations, agreed to.

Letters from the Editor and Sub-editor of the Pharmaceutical Journal were read in reference to the communications made to them, by desire of the Council at their meeting in March, respecting the editorial staff, and arrangements as to the future publication of the Journal.

Resolved—That the said letters be acknowledged and referred for consideration to the June Council.

Notice of Motion for the Meeting of Council, June 1st, 1870.

MESSRS. BRADY AND DYMOND.

1st. That in view of the impending change in the mode of conducting the Pharmaceutical Journal, and in order to introduce the New Series under conditions the most favourable for commanding literary and financial success, the Secretary be instructed to insert advertisements forthwith in the 'Times,' 'Athenæum,' 'Chemical News,' 'Scientific Opinion,' and 'Nature,' inviting applications from gentlemen capable of undertaking the duties of Editor and Sub-editor respectively. All applications to be forwarded to the Secretary on or before the 18th June.

2nd. That a *Special Committee* be appointed to meet on the 21st June to select from such applications a limited number for the consideration of the Council, and that on the 22nd June a *Special Council Meeting* be held to receive the Report of the Committee and proceed to the election of Editor and Sub-editor.

Notice of Motion for Council Meeting, June 1st, 1870.

MR. DYMOND.

That it is desirable on the commencement of the New Series of the Pharmaceutical Journal that the proceedings of this Council be more fully reported in that and other Journals than is the case at present, and that reporters, not exceeding two in number, be admitted to the meetings of the Council; that their reports be revised by the Journal Committee, and any matter withheld which it may deem unsuitable for publication.

Pharmacy in Ireland.

With reference to the proposed Bill to enable persons registered as Chemists and Druggists in Great Britain to exercise their business in Ireland, it was stated that the Solicitor-General for Ireland was about to introduce a Bill to regulate the sale of poisons in Ireland, and that it was probable the Bill proposed by the Council would be engrafted upon his.

Resolved—That the report and proceedings of the Conversazione Committee be received and approved.

On the report of the Benevolent Fund Committee, a grant of £10 was made to the daughter of a deceased member at Southampton.

BOARDS OF EXAMINERS.

April, 1870.

England and Wales.

Major Examination,	6 candidates examined,	5 passed.
Minor „	23 „ „	14 „
	—	—
	29	19

Preliminary Examination, 12 certificates were received and approved.

Scotland.

Minor Examination,	2 candidates examined,	2 passed.
Modified „	6 „ „	5 „
Preliminary „	17 „ „	13 „
	—	—
	25	20

Resolved—That the sum of ten guineas be granted for the expense of providing books for prescriptions for the use of the Examiners and Students.

Resolved—That the following, being duly registered as Pharmaceutical Chemists, be severally granted a Diploma stamped with the seal of the Society:—

Cadman, Daniel Charles, London.
Porter, John Thomas, Long Sutton.
Swift, William Philip, Spalding.
Thomas, James John, Croydon.
Walker, John Wesley, Maidenhead.

Resolved—That M. Jean Baptiste Dumas, of Paris, and Henry Enfield Roscoe, Ph.D., F.R.S., of Manchester, be elected honorary and corresponding members of the Pharmaceutical Society.

Resolved—That the following Pharmaceutical Chemists be elected Members of the Society:—

Barclay, Thomas, Birmingham.
Calvert, Robert, Stokesley.
Doughty, Edward Thomas, London.
Sequeira, Eduardo C., Rio Grande do Sul.

Resolved—That the following Registered Chemists and Druggists be elected Members of the Society:—

Beddard, John, 46, Churton St., London.
Cooper, Arthur, Ashby-de-la-Zouch.
Dunsford, Frederick Wm., Hammersmith.
Forrest, Robert, South Shields.
Gloyne, Charles Glyn, Dewsbury.
Henderson, Michael James, Keswick.
Page, John, 47, Blackfriars Rd., London.
Pemberton, Thomas, Birmingham.
Taylor, William Reay, Middlesborough.
Thomas, Watkin Jones, Aberdare.
Tuck, George Frederick, Upper Teddington.
Wilson, Thomas William, York.

Resolved—That the following, having passed the Modified Examination and being in business, be elected "Associates in business:"—

Bonny, John, Syston, near Leicester.
Brooks, John Edwin, Oldbury.
Collins, James, 145, High St., Tewkesbury.
Cooper, Thomas, Sunderland Street, Macclesfield.
Darby, John Clark, 63, Elizabeth Street, Belgravia.
Harvey, William Rivett, 64, Humberstone Road, Leicester.
Lewis, Edwin A., 3, Mornington St., N.W.

Resolved—That the following Candidates, having passed their respective Examinations, be elected Associates of the Society:—

Barrett, Frederick John, Lowestoft.
Bell, James, Manchester.
Breton, Harvey W., London.
Churchill, Henry, Reading.
Coates, Edwin, Bath.
Cole, George, Jersey.
Collier, James, Wimbledon.
Collins, Henry George, Windsor.
Covell, William Mann, London.
Freestone, Robert Henry, Bristol.
Florance, John Draper, London.
Graham, Monkhouse, Tunbridge Wells.
Hartley, William Henry, Leek.
Jackson, John Pim, Leeds.
Jones, John, Tunbridge Wells.
Learoyd, Edwardus Radley, Sheffield.
Samuel, Albert Henry, Liverpool.
Strickland, George Hodgson, Darlington.
Thresh, John Clough, Pontefract.
Warman, William Albert, Canterbury.
Williams, David T., Cheltenham.
Williams, John, Llanbaddoc.

A list of Members who had paid their subscriptions since the 30th of April was presented, and it was

> Resolved—That they be severally restored to their former status, on payment of the nominal fine of one shilling

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MEETING OF THE COUNCIL, *May* 18*th*, 1870.

MR. HENRY SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

MR. HASELDEN, VICE-PRESIDENT.

Present—Messrs. Abraham, Bottle, Bourdas, Brady, Carteighe, Deane, Edwards, Hills, Ince, Mackay, Morson, Randall, Sandford, Savage, Squire, Stoddart, and Williams.

PROPOSED REGULATIONS FOR THE KEEPING AND DISPENSING OF POISONS.

Memorials against were read from Chemists and Druggists at Oxford, and from the Chemists' Association at Liverpool.

> Resolved—That Mr. Charles Wood, of Harleston, and Mr. Thos. Dadford, of Northampton, be elected members of the Society.

A list of Members who had paid their subscriptions since 30th April was presented. It was

> Resolved—That they be severally restored to their former status on payment of the nominal fine of one shilling.

The Council then adjourned to the Annual General Meeting.

ERRATA on p. 673, line 35, *for* "Damill, Charles," *read* Darnill, Charles; line 36, *for* "Chemists," *read* Pharmaceutical Chemists.

EXAMINATIONS IN LONDON.

May 6*th*, 1870.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Gale, Garle, Haselden, and Southall.

Dr. Greenhow was also present on behalf of the Privy Council.

MODIFIED EXAMINATION.

Thirty-eight candidates were examined; the following twenty-one passed and were duly registered as

CHEMISTS AND DRUGGISTS.

Argue, James, Yeovil.
Beall, George, London.
Bell, John, Brighton.
Butler, Edward Henry, Leicester.
Carter, Alfred, London.
Child, Thomas, New Wortley, Leeds.
Lightfoot, John, Melbourne, Victoria.
Lucas, William, Manchester.
Luddington, Tom, Bristol.
M'Nulty, James, Bradford.
Morgan, George, Tamworth.
Morris, Frederick Robert, Lowestoft.
Moss, Thomas, Newport, Salop.
Neame, Harry Austin, Margate.
Orme, Alfred John, Deal.
Schmidt, Charles, London.
Tench, Richard, London.
Turton, Randolph Culwick, Birmingham.
Wigginton, Henry Becher, Liverpool.
Williams, John, Liverpool.
Wright, Herbert, Burton-on-Trent.

FIRST, OR PRELIMINARY EXAMINATION.

One hundred and forty-seven candidates were examined; the following one hundred and nine passed, and were registered as

APPRENTICES OR STUDENTS.

- Rickarby, Arthur George, Bromley.
- Equal.
  - Rodway, Jabez, Hitchin.
  - Wilcox, Charles James, Ashton-u.-Lyne.
- Jennings, Robert, Haslingden.
- Green, George, Thetford.
- West, William, Leeds.
- Baker, Isaiah James, Coventry.
- Rivett, Arthur James, Yarmouth.
- Style, John William, London.
- Equal.
  - Bark, John, Liverpool.
  - Clark, Walter Beales, Leicester.
  - Hughes, James, Swansea.
- Wills, Joseph, Carlisle.
- Equal.
  - Watson, Samuel, Belper.
  - Willey, Thomas, Manchester.
- Elliott, Thomas, Clay Cross.
- Ellison, John Clement, Ashton-u.-Lyne.
- Equal.
  - Bartlett, Francis, Torquay.
  - Davies, Thomas William, Cardigan.
  - Grace, Walter A., Bootle, Liverpool.
- Brownrigg, Alfred, Liverpool.
- Shapley, Charles, Torquay.
- Equal.
  - Collins, Martin, Chertsey.
  - Sherburn, Thomas, London.
- Melhuish, Henry, Newcastle-on-Tyne.
- Green, Edward, Leicester.
- Equal.
  - Braddock, Henry, Oldham.
  - Illsley, Thomas Brown, Ripley.
- Equal.
  - Brown, R. Fearon, Lower Kennington.
  - Fewster, William Longwood, Birkenhead.
  - George, Henry, Sheffield.
- Capes, Howard Hawksley, Epworth.
- Equal.
  - Carrington, Edward G., Bakewell.
  - Edwards, James, Halesworth.
- Equal.
  - Howe, Oliver George, Stony Stratford.
  - Prince, Herbert Francis, Norwich.
- Equal.
  - Fletcher, Ellis, Atherton.
  - Latham, Robert John, Worksop.
- Equal.
  - Baron, William Beevers, Horncastle.
  - Hall, Christopher H. N., Eastbourne.
- Equal.
  - Clarke, Christopher, Northwich.
  - Parris, Thomas Watkin, Taunton.
- Equal.
  - Gardiner, William Eustace, London.
  - Luke, Richard Samuel, Plymouth.
  - Teebay, John, Preston.
- Francis, Charles, Winchester.
- Equal.
  - Jones, James Parry, Newcastle Emlyn.
  - Loveless, Edward William, Bath.
- Wilkerson, Wallis, Weymouth.
- Equal.
  - Brooks, Charles Theodore, London.
  - Fox, Thomas Augustine, St. Helen's.
  - Stead, Thomas Albert, Heckmondwike.
- Equal.
  - Dowson, Joseph, London.
  - Faraker, John Joseph, New Brighton.
  - Lambert, William Henry, Hull.
- Bond, James Benjamin, Hull.
- Harvey, Duncan, Grantown.
- Equal.
  - Bradley, William, London.
  - King, George, Surbiton.
- Equal.
  - Hall, Thomas, Driffield.
  - Kiddle, Richard Neller, Lambeth.
  - Lincolne, William, Ely.
  - Protheroe, Francis Richard H., Lydney.
- Princep, Philip, Uppingham.
- Bathe, William, Chippenham.
- Equal.
  - King, Frederick H., Chippenham.
  - Richardson, Alfred, Manchester.
  - Stones, John, Wortley, near Leeds.
- Hayton, John William, Wigton.
- Masson, George, London.
- Equal.
  - Johnson, Samuel, Barnard Castle.
  - Sutcliffe, Edward West, London.
- Budworth, William Seth, Bolton.
- Equal.
  - Davies, Edward W., Newcastle Emlyn.
  - Patman, Frederick T., Whitehaven.
- Butters, William B., Gainsborough.
- Huggins, Robert, Southampton.
- Equal.
  - Bates, William, Stevenage.
  - Bradley, John, Hull.
  - Wrigglesworth, George, Hull.
- Equal.
  - Booth, George S., Heckmondwike.
  - M'Call, Edward William, London.
  - Woolstencroft, Joseph, Norwich.
- Williamson, Nicholas, Whitehaven.
- Polley, John, Chester.
- Equal.
  - Clarke, Richard, Bristol.
  - Graves, Robert, Hull.
  - Davis, Benjamin, Leamington.
- Equal.
  - Aris, George Henry, Wellingborough.
  - Duncan, John, Aberdeen.
  - Maddison, Henry Gildon, London.
- Baynham, William Beavan, Bath.
- Equal.
  - Masters, Henry James, Bath.
  - Wells, Ernest William, East Dereham.
- Evans, Alfred James, Newtown.
- Myott, Frederick, Oldham.
- Equal.
  - Cheetham, George Richard, Bradford.
  - Smith, Charles, Sleaford.
- Equal.
  - Little, Henry, Surbiton.
  - Roach, Herbert William, London.
  - Taplin, Joseph W., Bristol.
- Equal.
  - Bishop, Thomas, Lynn.
  - Cox, William D., Grantham.
  - Jameson, Walter George, Reading.
  - Jones, Walter, Carmarthen.
  - Lett, Arthur Joseph, Manchester.
  - Rippon, Edwin, Stamford.
  - Robinson, Edward Henry, Chichester.
  - Whitlamsmith, Walter, Uppingham.

The above names are arranged in order of merit.

Addenda.—P. 592. In the list of persons who passed the Preliminary Examination, after Gall, Alfred, Woodbridge, *insert* Harvey, Joseph Jarrom, Dalrymple.

P. 594. In the first list of Apprentices whose certificates were approved, after Dennis, William R., London, *insert* Hulme, Richard Gleave, Hammersmith.

The following, having presented to the Board certificates of examination by legally constituted Examining Bodies, and the said certificates having been approved, were registered as—

APPRENTICES OR STUDENTS.

Bennett, Charles, Bristol.
Davis, Henry John, Newbury.
Forster, George Frederick, Bristol.
Laws, Charles Frank, Norwich.
Twelvetrees, Walter Noble, Manchester.

Certificates of examination of the undermentioned were, in accordance with the regulation of Council, dated February 2, 1870, received and approved.

Blackmore, James, Swansea.
Perry, George Edward, Dudley.
Reymond, John, Cardigan.
Salmon, Thomas, Cardigan.
Spensley, William, Manchester.

May 25th, 1870.

Present—Messrs. Bird, Carteighe, Cracknell, Darby, Davenport, Deane, Edwards, Evans, Gale, Garle, Haselden, Ince, and Southall.

Dr. Greenhow was also present on behalf of the Privy Council.

Twenty-six candidates presented themselves for examination; the following passed, and were duly registered:—

As PHARMACEUTICAL CHEMISTS.

Ferguson, William Kennedy, York.
Grose, Nicholas Male, Wadebridge.
Jackson, John, Tadcaster.
Williams, Richard, Brixton.

As CHEMISTS AND DRUGGISTS.

*Knowles, Joseph, London.
Metcalfe, Edmund H., Richmond.
Cocker, James D., Pendleton.
Cross, William Gowen, Shrewsbury.
Baker, William Ritchie, Hounslow.
Gill, Joseph William, Pendleton.
Thompson, Benjamin, Brighton.
Pope, Arthur N., Bath.
Francis, Thomas, Stowmarket.
Homer, Frederick George, Birmingham.
While, William John, Cheltenham.

The above names are arranged in order of merit.

PHARMACEUTICAL MEETING.

Wednesday, *May 4th*, 1870.

MR. A. F. HASELDEN, VICE-PRESIDENT, IN THE CHAIR.

The Minutes of the previous Meeting having been read, the following

DONATIONS TO THE LIBRARY AND MUSEUM

were announced, and the thanks of the Meeting given to the respective donors thereof:—

List of Specimens in the Museum of the North British Branch of the Pharmaceutical Society: from the Library and Museum Committee of the N. B. Branch,—La Pêche du Hareng: from Dr. J. L. Soubeiran.

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* Passed with honours.

The **Chairman** drew attention to several articles which had been sent for exhibition, including a specimen of tasteless cod-liver oil from Messrs. Fox, of Manchester, and a poison-bottle from Mr. H. C. Baildon, of Edinburgh, the peculiar feature of which consisted in its having an india-rubber cap over the stopper.

PURE HYDRATE OF CHLORAL.

Mr. **Hanbury** exhibited, at the request of Dr. C. A. Martius, of Berlin, a specimen of pure hydrate of chloral in transparent detached crystals, prepared by crystallizing the ordinary hydrate of chloral in cakes. Also a specimen of a compound of chloral with alcohol.

Professor **Attfield** said that the production on a commercial scale of large clear crystals of chloral such as those now shown was a matter of some importance, as their appearance was to a great extent a guarantee of absolute purity. It was of no less importance that pharmacists should know that the light feathery masses of alcoholate of chloral might be met with in trade, for whereas the hydrate contained nearly 90 per cent. of chloral, the alcoholate only contained about 70.*

Professor **Redwood** drew attention to some specimens which had been handed to him by the President, illustrating a subject which had been before the Society on several occasions, namely, Linimentum Potassii Iodidi cum Sapone. On previous occasions it had been suggested that probably some of the difficulties which had been experienced in making this liniment, might be overcome by using a soap made in the way suggested by Mr. Wood a short time ago, from oil of almonds—a soda soap, which would principally contain oleic acid, and, from the fact of its being a soda soap, there would be great facility in purifying it and making it perfectly neutral. One or two of the early attempts in the use of this soap had not been successful: one specimen exhibited, although perfectly gelatinous at first, after a little time separated, the solid saponaceous matter floating to the top, and the other part being perfectly fluid. Mr. Evans, however, stated that he had had some of this kind of soap made very carefully, —a specimen of which was on the table,—and that it had been used with perfect success in making both soap liniment and linimentum potassii iodidi cum sapone; samples of both of which were also exhibited. He admitted, however, that on exposure to cold it underwent a separation, but if that occurred, nothing more was necessary than to warm it and shake it up, when it assumed a gelatinous consistence. It appeared, therefore, that this mode of preparing the liniment was in every respect the most satisfactory which had been suggested, and he certainly thought the liniment in this condition was more convenient for use than the more solid forms produced with animal soaps. There was also this advantage, that soap made in this way was much more definite, and might be expected to be more uniform in its composition than any other.

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* Dr. Martius has since stated to Mr. Hanbury that Dr. Liebreich has shown alcoholate of chloral to be without therapeutic value. Dr. Martius promises further information on these alcoholates—for there are several.

PRESCRIPTIONS FOR EXAMINATION.

BY JOSEPH INCE.

It may be in the recollection of some, that at the last Evening Meeting, I was allowed to bring before your notice the subject of Prescriptions for Examination. Should there be any present now who were absent then, let me repeat that which I was anxious to explain—that I do not come before the members of the Society either as critic, innovator, or reformer. Circumstances alter modes of action. Our Library and Laboratory are thronged with students, and candidates for examination, Modified, Preliminary, Minor and Major, overtask the physical capabilities of the Examiners. Knowing this, a few pharmacists in London, joined by others in the country, raised between them about 500 recipes, in order to meet the difficulty.

It became obvious that personal influence had reached its limit, and that it was useless thus to undertake the scheme of providing for the Pharmaceutical Society a collection of Autograph Formulæ which should stand alone.

By the advice of Professor Redwood an explanatory notice was inserted in our Journal—and the matter having three times been brought before the Board of Examiners, twice by myself, and subsequently a third time by Mr. George Edwards of Dartford, was submitted to a public meeting. The results, most gratefully acknowledged and beyond anticipation are given in alphabetical order.

I. Professor Attfield. Foreign illustrations of the Metric-Decimal System. We have already, and hope to have more, advanced students in chemistry, and it is most desirable that they should have the opportunity of comparing theoretical studies with practical experience. This collection will not pass into general circulation, it is of too great value. Under proper supervision it will be accessible to all.

II. Mr. Baines. Connected with the firm of Messrs. Meggeson.

III. Baildon, H. C., Edinburgh. A most admirable collection.

It has been suggested that it was not possible to obtain autograph formulæ of extreme doses. Mr. Baildon sends the following original prescription:—

℞ Vin. Ipecacuanhæ ʒij
Tinct. Camphoræ Co. ʒij
Morphiæ Hydrochlor. ʒij
Syrup. Scillæ ℥iss
Aq. Menth. Pip. *ad* ℥vj.
Sig. A tablespoonful three times a day. ✓

Therefore 10 grains of Hydrochlorate of Morphia would have been taken for the dose. Obviously a mistake in nomenclature—the Solution was intended.

Another Pharmacist sends the following:—

℞ Assafœtidæ gr. xij
Strychnine, gr. j.
M. In pilul. vj divide. One to be taken every four hours. To be silvered.

IV. Barnitt, J., Leamington. Various.

V. Messrs. Bell and Co., Oxford Street.

VI. Messrs. Bell and Co., Oxford Street.

VII. Messrs. Bell and Co., Oxford Street.

VIII. Messrs. Bell and Co., Oxford Street.

The address is repeated, lest some different establishment might seem indicated. When a firm does things in this splendid manner, it is out of our power to return thanks in the way we should think fit.

IX. Mr. Bourdas, Belgravia. This is the gentleman who began with giving me 113 formulæ.

X. Cracknell, Charles. Collections for the Society and Formulæ picked up at Sebastopol.

XI. Davies, M. P., Tenby (Rare antiques): W. Duncan, Grantown, and Messrs. Duncan and Flockhart, Edinburgh.

XII. Gerrard, A. W., Guy's Hospital. Here is a specimen.

℞ Bals. Peruvian (VOS) ʒss
Inf. Sinapeos ʒiss.

M. ft haustus ter in dies sumendus. Educautur Scintillæ electricæ Brachiis ambobus, alternis Diebus.

Dr. Ralph, 1792.

XIII. Gwatkin, J. T., Brighton. Very good.

XIV. Hanbury, Daniel. A splendid collection, far exceeding in itself anything the Society has yet possessed.

XV. Hillen, J., Cheltenham. This is beyond praise. It commences with a selection from Sir B. Brodie, while the second portion illustrates the whole medical practice of Cheltenham.

XVI. Hodgkinson, Charles, Mildmay Road.

XVII. Hornsby, G. G., Brighton. An excellent collection.

XVIII. Hustwick, T. H., Liverpool.

XIX. D. W. John, Pembroke. Two collections. These compilations, represent the medical practice of the particular district named.

XX. Lawrance, E., Welwyn, Herts.

XXI. Lieving, Dr. Own private practice.

XXII. Lucas, J. Birmingham.

XXIII. Luff, William. Oxford.

XXIV. Mackay, John. Edinburgh. An admirably arranged collection, every recipe bearing the prescriber's name a plan which much increases its value.

As a return compliment I have reset, and augmented the book belonging to the Edinburgh Board of Examiners.

A second is also promised.

XXV. Pullin, W. H. Leamington.

XXVI. Reynolds Richard. Briggate. Leeds.

A good collection. A volume has been promised for their Association. An experiment will be tried with prepared linen leaves which seem likely to supersede all others, both from their texture and the beauty of machine insertion.

XXVII. Savory Charles H. New Bond Street.

Something excellent, including Budd, Copland, Cutler, Henry Davies, Gream, Ernest Hart, Henry Charles Johnson, Sir Ranald Martin, Latham, Pettigrew, Stone, Todd, and others. Last but not least, Victor de Méric.

You will have anticipated me when I say that Mr. Savory must originally have dated from King's College.

XXVIII. Smith Edward. Torquay.

XXIX. Smith William. Nailsworth.

XXX. Steward J. Brierley Hill. Staffordshire.

These prescriptions may rank among the curiosities of Pharmaceutical literature. I have not yet been able to decypher them.

XXXI. Turney S. B. Plymouth. An excellent collection.

XXXII. Yewdall Edwin. Leeds.

Once more, and for the last time, for I must not further trespass on your patience, I appeal to you personally for support. Should you choose, there will be no finer collection of illustrative formulæ than our own.

Many, and they are those who never break their word, have volunteered to collect in England: two gentlemen are at work in Italy—the one in Naples, the other at Turin; and at this moment a strong application, framed by my friend and companion in arms John Cargill Brough, is making its way across the Atlantic. I live in hope that cities like New York, Philadelphia, Baltimore, Boston, Washington, and many others, will shake hands with us in this undertaking. Our excellent President might be induced to write to Canada, and I am certain that Mr. Albert Ebert of Chicago will give his warmest support. There can be no good reason why the ocean should separate otherwise than geographically, two great countries such as America and England.

Seeing the abundant willingness to assist, I felt justified in commencing fifteen volumes, to be placed under the direction and superintendence of the Board of Examiners. These are already in hand and will appear with all convenient speed. The shape, paper, and binding, have been arranged by a London artist firm and I hope, the minor bookmaking details will meet with your approval. I cannot proceed fast as that would be to risk the nature of the work. Purposely, the most difficult and the simplest formulæ have been intermingled.

It remains to offer an explanation, answer an objection and to endeavour to upset a theory, revived to my blank astonishment, to which, this night as always, I offer uncompromising opposition.

Amongst these collected formulæ will be found specimens of cabalistic writing—apparently there is some reason why a physician does not fear inserting in a recipe caligraphy on which he would hesitate to venture in his private correspondence. Foreign prescriptions in abundance are included. These are tests of the student's skill, and gauges of his experience. But let it be clearly understood that no candidate ever is rejected simply from failing to unravel these mysterious documents—a mass of usual formulæ is presented to his observation—these, should his aim be not merely to pass an examination but to succeed in after life, he must be prepared to read with accuracy and facility—while a knowledge of the more difficult will hereafter be of great importance. An objection has been raised that the advantage thus offered is limited to London, a difficulty which at this moment is under serious consideration. Yet it exists for London, the great business and intellectual centre, will always be the metropolis; and as Rothschild said that there was money under every stone in Frankfort for those who knew how to find it, so there is a sense in which London is paved gold. There is an undeniable advantage in a town residence else why should students leave green fields for bricks and mortar? Therefore shall we close the books or abandon their collection. Surely the same argument which is not contained in Whately's Logic would close the Museum and shut our doors.

This leads to the vexed question of the utilisation of our Library of Reference—I would claim your consideration when I state views which are definite and settled though they may not be in accordance with your own. I would make these receipt books, under proper regulation and supervision absolutely free. I would allow those interested, and specially kindred associations, to extract, copy or trace as much or as little as they please. This would but be to follow the example of our national institutions; nor must we forget that in the magnificent Art Library at South Kensington, any, professional or amateur, for the sum of sixpence weekly, may read, extract copy or trace even the costliest specimens exhibited in that unrivalled collection.

Let me offend no one while unhesitatingly I condemn a certain idea against which I stand out resolutely as a rock. I should deem it waste of every moment spent in this present work were the books locked up for the special benefit of the examiners. But the notion I dislike the most is that the student should not be allowed to gaze on the *same* documents, as his examiner.

Why are those young men tampering with the drawers of Materia Medica? Perhaps they want to know more than print and cram books will tell them. Imagine the despair of a well known examiner receiving answers from a man who had never seen a root or bark. Might he not be expected to retire to some secluded City Court, and never to be heard of more? Why are those others touching and handling plants and flowers? The police are most remiss: and positively before my very eyes, there is a third, investigating an assortment of chemicals. Professor Attfield exclaims with horror—"You could not have guessed at them had you not seen them before." "Excuse me," (replies the student,) "that is precisely what I should have done?" How, and why, do you draw the line, what is the line, between one branch of Pharmacy and another?

But probably the students might get to know too much. One would put the other up to private dodges and the examination be reduced to a mere form. That our students should accidentally be too well instructed, is not in the number of my anxieties. I remark simply that if throwing these books open, results in candidates being thoroughly competent to understand their contents, this will be the brightest experiment yet made since the creation of this Society. When that Millennium dawns, I solemnly engage to illuminate St. George's Place. What *can* be the wish of an examiner; what *can* afford him higher pleasure than that the examined should be equal to the ordeal? This illiberality, not to say injustice, implies that our examinations are a catch—a trap arranged to snare the candidate, a block for an anticipated stumble.

Nothing more characterises our Examinations (a sentiment I am certain our excellent Inspector will confirm) than their fairness. From personal observation I may say that the examiner is invariably on the side of the Examined—We want him to *know*—to have that amount of knowledge which shall compel future success: and it is not the object of the Board to ask quibble questions, answered glibly by clever superficial applicants, but misunderstood by scholars.

Still was not the Society's own collection mentioned formerly, and is it forgotten that that interesting volume looked like a railway accident? Only remember that 62 prescriptions formed the limit of the Society's accommodation. The existence of that too bulky tome, militated against the doctrine of continuity. Given the number of students, and the aid supplied and how can we wonder at the result?

But it is said, and this I cannot endure, that the students will spoil the books. Then somebody is to blame. Books used with love and reverence will remain unsoiled for years. Masters might occasionally tell those employed in their service, what these compilations hold: something about Sir B. Brodie who himself became a dispenser—and when asked the reason why, said it was to educate his hands—something about Dr. Paris, whose work, the Pharmacologia is up to this night, the most perfect representative of its class of Pharmaceutical Literature: something about Elliotson whose diagnosis of disease was thought infallible and to whom the great novelist addressed an exquisite dedication of his best fiction: Something about Liston, that first of operators—Sir Hy Halford, unrivalled as a Latinist: something about Sir Wm. Ferguson, who once asked a London Editor whether he had not better go back to Scotland as he was not successful here, and who fortunately for his reputation, himself and science, changed his mind. No man can be a successful Physician whose history is devoid of interest.

Aware of these things will students spoil the books? I am ashamed of having employed so much time in their defence. Let these new volumes, soon to adorn our shelves, reflect credit on English Pharmacy, and be a standing memorial of unwonted personal kindness be placed in our Library free as air. And while I thank you for the patience with which you have listened to these details let me parody a sentence often seen in our free places of recreation. "These Gardens being the property of the public, they are requested to protect the flowers." So I say—These books being *your* property, kindly keep them in good preservation.

Contributions have also been received from McGuffie and Co., Liverpool, and Henry Peake of Dover.

Mr. **Bland** said the subject which had been so ably brought before them by Mr. Ince was one of very great interest, but he could not quite go with him in all that he had advanced upon it. No doubt it would be a matter of just pride to the Society to possess an unrivalled collection of prescriptions, but, on the other hand, it seemed to be imagined by Mr. Ince, that it was the duty of the gentlemen who were employed in instructing students to teach them how to read and dispense prescriptions. It seemed to him that this would entail so much additional labour that a new professorship would have to be instituted for the purpose. On the other hand, as far as his experience went, he believed it was impossible to teach a student the art of dispensing prescriptions simply by the aid of a professor or a book. The difficulties which young men met with in dispensing prescriptions, arose from various causes. In the first place, there was the question of handwriting, and he must say he could not agree with Mr. Ince in applying such a term as caligraphy to the writing of a certain physician, many of whose prescriptions had passed through his hands; if he had said *cacography*, the term would have been more expressive, and certainly more correct. They knew that medical gentlemen sometimes said hard things of pharmacists, but he really thought if they were inclined to retaliate, they might often do so with effect on the subject of prescriptions. But passing over the question of handwriting,—for men in other professions sometimes wrote badly,—there were other difficulties. On taking up another prescription, it would be evident that the writer was either ignorant or oblivious of the very elements of the Latin grammar. Take another, and it would appear that the writer knew nothing whatever about the most simple chemical reactions. For instance, within the last month he had had brought to him a prescription, in which diluted sulphuric acid and prepared chalk were used in the same mixture. Of course the medicine failed to accomplish the object for which it was prescribed, and the physician becoming further enlightened, on repetition omitted the acid. Going a little further, it would be evident that the writer of the next had not seen or studied the British Pharmacopœia, as it contained terms perfectly obsolete, which were only to be found in pharmacopœias now extinct. But passing by these things, it seemed to him that the fashion of prescriptions was constantly changing, so that even if they got students well up in this magnificent collection which Mr. Ince was now preparing, in ten years' time they would have again to study the peculiarities of a new school of physicians. He was quite certain, from his own experience, that no one could readily dispense the prescriptions of certain physicians unless they had been initiated into their peculiarities under a practical instructor.

The **Chairman** said it was quite true that a practical knowledge of the art of dispensing could not be acquired by looking at a collection of prescriptions, but, at the same time, by studying a large number of specimens, a certain degree of facility in reading bad handwriting would be acquired.

Professor **Attfield** said that he did not understand that Mr. Ince was anxious to make this grand collection of prescriptions merely educational, or that the existing or any future professors should be called upon to teach dispensing, or any part of it, even if it were possible to do so, by showing the students a number of prescriptions in a book. His idea was, that the collection should be one for reference, open as well to students as to others. Certainly, as a teacher of chemistry, he should consider himself fortunate if he were able to refer a student to the particular prescription which Mr. Bland had mentioned, in which the constituents of plaster of Paris were ordered in a mixture. It showed that pharmacists should endeavour to ascertain what was intended by physicians; the prescriber in this case could not have desired to take a cast of his patient's stomach.

COMPOUND OINTMENT OF MERCURY.

BY A. W. GERRARD.

At the March meeting of the Society I made some remarks concerning a difficulty I had experienced in making the above ointment; since then I have made a few experiments with it, and the following are the results:—

I first followed the Pharmacopœia instructions, taking the quantities there expressed, and, as a result, obtained a mixture of undissolved wax, and particles of camphor mixed with the ointment of mercury, and oil, unfit to be called an ointment.

The cause of the fault lies in the directions for making, which tell us to melt the wax with a gentle heat, and add the oil, then, when the mixture is nearly cold, add the camphor in powder and ointment of mercury. Now, on adding the wax and oil together, the oil being cold, a portion of the wax becomes hardened, and is not redissolved on stirring, so it is necessary to use further heat, redissolving the wax and oil, and then adding the camphor and ointment of mercury. This answers very well for the quantity ordered in the Pharmacopœia, but in making larger quantities I have found it necessary, owing to the difficulty of powdering large quantities of camphor, to keep the wax and oil at its melting-point some time after adding the other ingredients; this helps to dissolve any coarse particles of camphor.

Some loss of camphor occurs by volatilization, but much of this may be prevented by making it in a jar with a close-fitting tin lid, having a hole cut in its centre for the insertion of a rod to stir it with.

In conclusion, I would suggest that the Pharmacopœia directions be altered, so that the wax and oil be melted together, the powdered camphor and ointment of mercury added, and the mixture kept at its melting-point till well mixed, then stir till cold, keeping the vessel well covered.

OINTMENT OF TURPENTINE.

BY A. W. GERRARD.

The ingredients of this ointment are oil of turpentine, resin, yellow wax, and lard. The Pharmacopœia directs us to melt these ingredients together by the heat of a steam or water-bath, remove the vessel and stir the mixture constantly while it cools.

If we examine the formula, we find that one of the ingredients is a volatile oil; and it struck me, that in making the ointment according to the Pharmacopœia, a loss of a portion of this would occur, so with the object of testing this I made a few experiments, the results of which are as follows:—

I operated upon the quantity of ingredients mentioned in the Pharmacopœia, weighing the resin, wax, and lard, and measuring the turpentine. I then weighed the whole of the ingredients together, which gave a total of 887 grains; I then melted them by the heat of a steam-bath, stirring till cold, the resulting ointment weighed 720 grains, thus a loss having occurred of 167 grains, or about three drachms by measure of turpentine.

I again prepared the ointment, this time first melting the resin, wax, and lard together, and removing it from the heat, then added the turpentine, stirring till cold; on weighing this a loss of 40 grains had occurred, or a saving of 127 grains above the Pharmacopœia process. This ointment was much too thin, so I prepared another quantity, adding 30 grains of resin and a quarter of an ounce of wax to the formula, and made it in the manner last described, which gave an ointment satisfactory in all respects.

My conclusions from these experiments are either that the quantity of resin and wax be increased or the turpentine decreased, and that the resin, wax, and lard should be first melted, then removed from the heat, adding lastly the turpentine, thus preventing much waste.

The CHAIRMAN then read the following letter from Mr. Rossiter, of Hastings, relative to an improved macerator or exhauster, which he had sent for exhibition:—

ROSSITER'S EXHAUSTER: AN IMPROVED APPARATUS FOR THE PREPARATION OF TINCTURES.

The two systems now in use for the preparation of tinctures are each liable to certain objections, which are pretty generally acknowledged.

In the process of maceration, the ingredients being allowed to settle at the bottom of the vessel, constant attention is required to disturb the spirit as it becomes saturated, or anything but a satisfactory result is obtained.

On the other hand, many are deterred from adopting percolation from the costliness of the apparatus and the liability to breakage, besides the additional trouble entailed in first having to macerate the ingredients for a time before transferring to a percolator.

Most pharmacists are agreed that the least troublesome, and perhaps the most efficient plan of any, is that of suspending the ingredient in the spirit, exhaustion being effected in a shorter time than in the ordinary way of maceration, and the shaking of the vessel unnecessary; whilst the risk encountered in percolation, of the spirit forming a channel through any part of the ingredients not evenly packed, and so leaving portions untouched by its action, is avoided.

In this process, as the spirit acts upon the solid matter and becomes more dense, it sinks to the bottom of the vessel and the fresher spirit rising to take its place, a descending and ascending current is established, which continues until the whole of the soluble properties are extracted.

The apparatus which I have the honour of introducing to you, through the kindness of Mr. Haselden, is the result of my experimental endeavours to avail myself of this well-known law, brought to the most practically useful form I can devise.

It provides a means of suspending the ingredients by a cage, made of pure tin, attached to a screw, which admits of its being raised or lowered to the exact level of the spirit, thus rendering it applicable for any small quantity of tincture which it may be required to make.

The outer vessel is of glass, fitted with a grooved wooden cover, which groove, to prevent evaporation of the spirit, is lined with india-rubber. An india-rubber ring also encircles the screw.

The cage is easily shifted when the operation is completed, and is particularly convenient for transferring the contents to the press cylinder.

The apparatus has also the advantage of being inexpensive and easily cleaned.

The CHAIRMAN added, there seemed one little advantage which the inventor himself had not mentioned, viz. that when the tincture was completed, the ingredients could, by means of the screw, be drawn entirely out of the fluid, and allowed to drain before they were removed for pressing, so that there would be no loss. It seemed a very good idea for macerating tinctures or cold infusions, though he could not admit that it would supersede percolation.

Professor **Attfield** said he presumed that it was the form of apparatus rather than the principle, which Mr. Rossiter desired to bring forward, for the same sort of thing had been suggested many years ago by Mr. Tyson, and afterwards by Mr. Donovan, whilst Professor Redwood had introduced the same principle into an apparatus which he had devised for maceration and percolation. He also knew that many pharmacists were in the habit, when making tinctures on a small scale, of suspending their materials in a canvas bag, by a string attached to the stopper of the bottle.

The **Chairman** said the use of a bag was an old story, but he did not think the conical shape of the bag generally employed was so favourable to a free circulation of the fluid through the materials as the cylindrical vessel here employed. He should not have said much about the apparatus, if it had been his own invention, but having been brought under their notice by a gentleman in the country, he thought they should give it their best attention.

Mr. **Bland** thought one objection was, that liquids and salts coming in contact with the wooden cover would become absorbed, and thus tend to contaminate future preparations. In the same way he did not approve of the solid materials, when in a moist state, coming in contact with the metal receptacle and with the air. This would be very objectionable in the preparation of tinctures, some of which were greatly affected by it. He feared that the process of percolation, pure and simple, had been almost banished from the present Pharmacopœia; but although he admitted that in the hands of careless or unskilful persons, the result was not at all satisfactory, yet in cases to which it was peculiarly applicable, it had advantages so great, that he for one was very unwilling to give it up entirely. He agreed that a cylindrical-shaped vessel was preferable to a conical for holding the materials, but he was in the habit of using a very simple percolator, made of a cucumber glass, which was nearly cylindrical, terminating in a truncated cone. The sides inclined to each other at a very small angle, thus allowing the spirit to pass through with as little lateral disturbance as possible. He might add, that in Henri et Guibourt's 'Pharmacopée Raisonnée,' published more than twenty years ago, there was a most excellent percolator figured, which he did not think had been surpassed by anything which had been produced in this country.

The **Chairman** said he did not think the wooden lid need come in contact with the liquid in the vessel, and with regard to the metal of which the cylinder was composed, he had himself used for many years a percolator made of block tin, which had never coloured any of his tinctures.

Professor **Attfield** said, in the example before them, the cylinder was made of perforated zinc, which would certainly be objectionable; no doubt it might be made of tin or of platinum, which would obviate any difficulty but that of expense.

ANNUAL MEETING, MAY 18TH, 1870.

H. SUGDEN EVANS, ESQ., PRESIDENT, IN THE CHAIR.

The **Secretary** having read the notice convening the meeting,

The **Chairman** said it had been customary for the President on these occasions to make an annual address, but he would take leave on the present occasion to deviate from that course, as he believed the business before the meeting would be of such importance, and would occupy so much time, that such an address would be unnecessary, and he would therefore defer, until he moved the adoption of the report, any observations which were necessary from the Chairman, and would at once call upon the Secretary to read the report of the Council.

Mr. **Brown** (Manchester) suggested that the report, which had already been circulated, should be taken as read.

The suggestion was put to the meeting, and carried unanimously.

FINANCIAL STATEMENT.—*From January 1st to December 31st*, 1869.

RECEIPTS.				£	s.	d.
Balance in Treasurer's hands (Jan. 1st, 1869)				2206	0	1
Life Members' Fund:						
Fees	84	0	0			
Interest	84	14	4			
				168	14	4
Government Securities:						
Interest				190	11	3
Rent				100	0	0
Arrears of Subscriptions				132	6	0
Subscriptions:						
364 London Members	382	4	0			
1418 Country Members	1488	18	0			
403 Chemists & Druggists, Members	423	3	0			
405 Entrance Fees, Chemists & Druggists, Members	850	10	0			
499 Apprentices	261	19	6			
310 Associates	174	6	0			
Donation	1	1	0			
				3582	1	6
Registration Fees:						
105 Pharmaceutical Chemists	809	11	0			
187 Chemists and Druggists (Minor Examination)	717	3	0			
716 Chemists and Druggists (Modified Examination)	751	16	0			
659 Apprentices (Preliminary Examination)	1383	18	0			
128 Examination Fees	134	8	0			
143 Registration Fees as Chemists & Druggists in Business	750	16	0			
16 Registration Certificates (Jury)	0	16	0			
				4548	7	0
Lectures, Fees				236	15	6
Laboratory, Fees				1060	2	0
'Register,' sale of				208	10	6
Balance due to Secretary (Dec. 31st, 1869)				3	6	10
				£12,436	9	0

EXPENDITURE.				£	s.	d.
Balance due to Secretary (January 1st, 1869)				24	2	8
Advertisements				27	9	0
Apparatus				20	6	3
Carriage				2	13	10
Collector's Commission				25	13	9
Conversazione	104	18	8			
Pharmaceutical Meetings	19	17	2			
				124	15	10
Examiners, Boards of (England and Scotland)				1016	15	8
Expense of the Society in Scotland				114	7	10
Furniture				35	7	8
Government Securities:						
Investment				4066	10	0
Honorarium to Secretary and Registrar				105	0	0
House Expenses				68	11	9
Journal, Balance of Account				31	18	8
Laboratory:						
Director's Salary for 1869	200	0	0			
Director's percentage on £991. 2*s*. 0*d*., Fees for Session 1868–1869	247	15	6			
Demonstrator's salary for 1869	100	0	0			
Assistant - Demonstrator's salary (1 quarter)	12	10	0			
Porters' Wages, etc.	88	5	6			
Chemicals, etc.	231	4	3			
Prize Medals	0	14	6			
				880	9	9
Law Costs				232	9	9
Lectures:						
Professor of Chemistry and Pharmacy, including payment of Assistant in his Department	300	0	0			
Professor of Botany and Materia Medica, including payment of Assistant in his Department	262	10	0			
Subscription to the Royal Botanical Gardens, 1868 and 1869	42	0	0			
Prize Medals, etc.	6	10	1			
				611	0	1
Library				47	10	10
Museum:						
Specimens and Sundries	49	1	2			
Curator's Salary	100	0	0			
				149	1	2
Postage				153	11	4
Registrars' Certificates of Deaths				5	9	6
'Register,' cost of publication				453	11	5
Rent, Rates, Taxes, and Insurance				339	2	5
Repairs and Alterations				257	18	7
Repayments				13	13	0
Salaries:						
Secretary and Registrar	437	10	0			
Assistant-Secretary, Clerks, and servants	588	2	6			
				1025	12	6
Stationery, Printing, Engraving, and Office Expenses				332	12	7
Sundries:						
General	26	10	0			
Diploma Cases	29	9	6			
Vienna Congress	60	0	0			
				115	19	6
Travelling Expenses				204	11	4
Deposit Note at Bankers'				1000	0	0
Balance in Treasurer's hands				950	3	1
				£12,436	9	0

BENEVOLENT FUND ACCOUNT FOR THE YEAR 1869.

	£	s.	d.	£	s.	d.
Balance in Treasurer's hands (Jan. 1, 1869)				81	1	9
Balance in Secretary's hands (Jan. 1, 1869)				0	2	9
Dividends on invested capital				288	18	9
Donations	37	13	2			
Subscriptions	549	4	7			
				586	17	9
Balance due to Secretary (Dec. 31, 1869)				0	0	3
				£957	1	3

	£	s.	d.	£	s.	d.
8 Annuitants, to Christmas, 1869, at £30 each	240	0	0			
2 Annuitants, elected Oct. 1869 (2 months to Christmas), at £5 each	10	0	0			
				250	0	0
Member at Jersey, from 1852 to 1868, age 63, cripple from rheumatic gout, now a Candidate for Annuity	20	0	0			
Member late at Brighton (third grant)	10	10	0			
Orphan daughter of a late Member at Southampton (third grant)	10	0	0			
Member late of London, age 48, ill-health	10	0	0			
Widow of a late Member at Flint, age 56	20	0	0			
Widow of a late Member at Leominster, aged 55, elected an Annuitant in October, 1869	10	0	0			
Widow of a late Member at Lancaster, age 61, now a Candidate for Annuity	10	0	0			
Widow of a late Member at London, age 50 (third grant)	5	0	0			
Associate of the Society for the year 1842, blind	10	0	0			
Registered Chemist and Druggist at Leicester, age 72	10	0	0			
				115	10	0
Premium on the Orphan Bentley's Policy of Assurance	1	11	2			
Advertisements	1	8	9			
Postage	12	15	3			
Printing and Stationery	14	7	0			
				30	2	2
Purchase of £150 Consols				139	13	9
Balance in Treasurer's hands (Dec. 31, 1869)				421	15	4
				£957	1	3

	£	s.	d.
Consols., 31st December, 1868	9850	0	0
Consols., purchase of, as above	150	0	0
Total invested Capital	£10,000	0	0

We, the undersigned Auditors, have examined the Accounts of the Pharmaceutical Society, and find them correct agreeably with the foregoing statement; and that there was standing to the account of the Society, at the Bank of England, and with the Bankers, on the 31st of December, 1869:—,

General Fund, on deposit at Bankers					1000	0	0
Do.	New 3 per Cents.	£9000	0	0			
Life Members' Fund		2890	0	0			
					£11890	0	0
Benevolent Fund	Consols.	10000	0	0			
Pereira Memorial Fund		100	0	0			
					10100	0	0
Bell Memorial Fund	Do.				2050	0	0
Secretary's Casual Relief Fund	Do.				105	0	0

FREDERICK BARRON,
W. HODGKINSON,
JOHN B. MACKEY,
WILLIAM SQUIRE,
ROBERT WESTWOOD,
} *Auditors.*

Feb. 22, 1870.

REPORT OF THE COUNCIL.

In tendering its first Report since the Pharmacy Act of 1868 came fully into operation, your Council has great pleasure in congratulating the Society upon its social and financial advancement, and the general approval by the trade and the public with which the new state of things inaugurated by the Pharmacy Act has been received.

The financial statement shows a large increase of members, whose subscriptions have considerably augmented the revenue of the Society.

Your Council notes with satisfaction that, during the past year, the sum of £4066. 10*s*. has been invested in the Government funds to the credit of the General Account; that a further sum of £1000 remained on deposit with the bankers; still leaving a balance in December in the Treasurer's hands of nearly £1000.

It is a matter of congratulation that a large number of those who have been registered as Chemists and Druggists have joined the Society as Members. But perhaps the most promising feature is the great addition to the roll of Registered Apprentices and Associates, whose alliance with the Society must tend to the practical advancement of the body; they are the earnest of the future. The crowding of the laboratory and lecture-hall is most encouraging to the prospect of the progress of pharmacy.

While regarding this progressive work with so much satisfaction, it seems scarcely necessary to point out that it could not be accomplished without increased cost; but your Council considers that the outlay on this head has been well expended. The call for further accommodation in the educational department has been carefully answered by your Council; extra benches have been fitted for students, including proper arrangements for the prosecution of analytical study, and a third teacher provided in the laboratory. No less than ninety students have entered to the chemical lectures, ninety-three to the botanical, and ninety-six to the laboratory course.

Education has been, from the commencement, one of the most prominent objects of the Society's care, and during the past year a desire for its acquirement has progressed even beyond the most sanguine hopes of former times.

As a consequence of the increase in the number of persons seeking admission to the Register, by what may be called the natural channel, and from the provision of the Act, which permitted a modified examination for assistants of three years' standing, the labours of the Board of Examiners have been very greatly increased. It is due to the members of this Board to say that they have shown a devotion to their work worthy of all praise.

Greatly increased responsibilities having fallen upon the Board, in consequence of the new conditions imposed by the Pharmacy Act, it was found necessary to review and amend the regulations.

Primarily the test of a liberal education presented itself as a matter of paramount importance. The Bye-Laws requiring that, in future, the Preliminary, or Matriculation Examination, should form a necessary precursor to the Minor and Major Examinations, it became a question how this Preliminary Examination should be conducted so as to cause the least possible inconvenience to candidates resident throughout the provinces, and still ensure a general uniformity in the examinations; hence the arrangement of a written examination, under the supervision of the Local Secretaries, on the principle of the Local University and Science Schools Examinations.

The operation of this new arrangement, so far as it has gone, has proved most satisfactory, and your Council congratulates the Board of Examiners upon the highly practical test it has thus established of the fitness of young men entering the profession to take up the great principles of the science of pharmacy. Other alterations in the regulations have been made, which are comparatively of minor importance.

It is a matter of congratulation that the responsibility devolving on the Board of Examiners has been relieved by the appointment of a Government Visitor; and your Council feels that the weight of this gentleman's approval in the character and manner of the conduct of the examinations, is an advantage both in the interest of the public and of the candidates.

At the last annual meeting it was resolved that the proceedings of the Council should be published in the Journal, the mode and amount of publication being left to the Council to arrange. Your Council trusts that it has satisfactorily responded to this instruction by the amount of publicity given in the Journal to its transactions.

The Journal account of 1869 does not show a balance to the credit of the funds of the Society as has been the case for the last two or three years; but it must be remembered that the profit or loss on the Journal depends mainly on the number of members, associates, and apprentices, to whom it is supplied without charge; and during the past year their increase has been so considerable, as to swallow up the profit shown on former occasions.

Your Council, having regard to the increased number of members of the Society, has carefully considered the position of the Journal and the influence it was designed to exercise over the body of pharmaceutists and chemists and druggists, and has decided on making it a weekly publication, commencing in July next, the importance of the discussions appearing in its pages, and the desire for more speedy pharmaceutical information, together with its increased popularity, clearly showing that such a change is desirable.

In the matter of legislation, your Council has not been unmindful. Certain imperfections, introduced as amendments into the Act of 1868, needed rectification, and have been corrected by the Act of 1869.

The amendment first proposed had for its object the removal of a disability of medical men, and in effect restored the Act to the condition of the Bill originally drafted by the Society. But Dr. Brewer, discerning an obscurity as to the construction of section 17 in regard to the labelling of compound medicines containing poisons, proposed an alteration to exempt medicines *dispensed under the prescriptions of qualified medical men* from the requirements of this section. Your Council, seeing the injustice which might arise from such a course to dispensers, into whose hands prescriptions might be put written by persons unknown to them, or who might be required to dispense medicines containing poisons even without a written prescription, at once took energetic measures, and spared no pains to obtain the exemption of such medicines also.

Assistants excluded through various causes from the provisions of the Act of 1868 were relieved from their disability by the amendment of 1869; 328 have secured for themselves the privilege of the extended time, and it is gratifying to note that of this number many have already passed creditable examinations, and been placed upon the register of chemists and druggists.

Your Council, impressed with the duty imposed upon it by the Pharmacy Act to regulate the schedule of poisons, and promulgate regulations for the keeping of them, issued an addendum of preparations of certain poisons named in the former schedule; and has further suggested for the adoption of the Society regulations, either one or all of which should either separately or conjointly be used in the keeping and storing of poisons. These regulations seem to meet every variety of circumstance, and exigence, and it will be for this meeting to decide on the adoption or rejection of them.

Remembering the difficulties in the way of making a positively correct register of chemists and druggists at the outset, your Council cannot but consider that the Registrar was successful to a remarkable degree, and that it is a matter of surprise how few persons have been registered erroneously. So far as reliable information has been obtained, since the publication of the Register, (and it is only from such information that the Registrar can have knowledge of impositions practised on him) steps have been taken by the Council to erase names improperly inserted. In some cases it has been found necessary to institute legal proceedings, as well against persons having obtained registration by fraud or error, as against others altogether unregistered who have been found dealing in poisons, and these proceedings, although involving both trouble and expense, have been attended with success. It is the manifest duty of your Council to protect the public, on the one hand, and the legitimate chemist on the other, in these matters; but, at the same time, to avoid harsh or vexatious prosecutions, than which nothing could tend more surely to bring the Pharmacy Act into disrepute.

There has been a magisterial decision, doubtless fresh in the minds of all, in which a Pharmaceutical Chemist was convicted and fined for *dispensing a prescription* containing poison, without due compliance with the provisions of the seventeenth section of the Act. The decision of the magistrates in this case was so obviously opposed to the whole spirit of the Pharmacy Act, so calculated if unchallenged to inflict hardship and injustice on dispensers, that your Council, as guardians of the whole trade, as well as trustees for the public, at once resolved to have the question brought before higher authority, and have satisfaction in learning that the conviction was quashed by the Court of Queen's Bench.

With regard to the Benevolent Fund, one of the primary objects for which the Society was called into existence, your Council has to regret that, notwithstanding the immensely enlarged community admitted to the benefits of this fund by the operations of the Pharmacy Act, only a very small addition has been made to the list of annual contributors. The increased number of persons eligible to participate in this fund necessitates an enlarged liberality towards its exchequer; but unfortunately your Council has not seen the augmentation which its sanguine hopes led it to anticipate. Of the balance in the hands of the Treasurer at the end of 1869, the sum of £500 has been invested; and in view of the desirability for electing one fresh annuitant at least at the next usual period for election, your Council has ordered the transfer of £500 from the General Fund, to the credit of the Benevolent Fund Account; and it is hoped that this appropriation of the Society's funds will lead to a large and hearty response from chemists and druggists generally.

During the past year an International Congress of Pharmaceutical Societies and Unions was convened at Vienna, and, in response to the invitation of the Executive, your Council sent your President and Professor Redwood to represent British Pharmacy. From the report of these gentlemen it would appear that their mission has been conducive to a cordial reciprocity of feeling between foreign Societies and our own, and by affording an opportunity of personal interchange of views and an explanation of the progress of Pharmacy in Great Britain, has created a higher appreciation of the improved position—social and political—acquired by Pharmacy in this country.

In compliance with a generally expressed wish, a very material alteration in the character and arrangements of the Annual Conversazione has been made this year. Ladies have been invited, to accommodate whom with comfort the rooms in the Society's house are wholly inadequate.

Permission has consequently been sought, and most courteously and promptly granted by the Lords of Committee of Council on Education to use the rooms of the South Kensington Museum, than which no more appropriate building could have been selected, where, amidst a vast assemblage of objects of the greatest interest and beauty, the Members of the Society may enjoy the special pleasure of viewing the valuable collection of paintings bequeathed to the nation by the late Jacob Bell.

The Conversazione will be held there on the evening of the Annual Meeting, and the President, Vice-President, and Council hope that all Members who can make it convenient, will honour them with their company, in response to the official intimation.

The Registrar placed on the table the following:—
Register of Members, Associates, and Apprentices of the Society.
Register of Pharmaceutical Chemists.
Register of Assistants.
Register of Apprentices or Students.
Under the Pharmacy Act, 1852.
Register of Chemists and Druggists.
Under the Pharmacy Act, 1868.

The Chairman then said: Gentlemen, assuming that the annual report has been read, I will now move its adoption; and, in so doing, I must ask the indulgence of the meeting whilst I make a few observations on some of the topics referred to in that Report, and upon some kindred subjects. The avowed objects of the founders of this Society were the amelioration of the condition, and the elevation of the character, of those professing pharmacy; and the means suggested for carrying out these objects were, first, to unite the whole of the chemists and druggists into one body, and, secondly, to organize a system of education, and claim for the qualifications thus obtained certain privileges. We are now entering upon our thirtieth year. A whole generation has passed since the leading minds which called this Society into existence were in the heyday of their fame, and it is interesting and pleasing to note how completely in the course of that generation the objects of the founders have been carried out. We are now a united body. The whole of the chemists and druggists of Great Britain are united into one band; a system of pharmaceutical education has been perfected; the necessity for education has been legally recognized, and within the custody of this Society is the regulation and test of pharmaceutical education. Drawing your attention to the annual report, the first subject which seems to me to call for comment is that with reference to the Board of Examiners and the examinations. In looking to the balance-sheet, it will be observed that the expenses of the Society have been greatly increased under the head of Board of Examiners, and this arises from several causes. It arises from the increased labours which have been thrown upon the Board of Examiners, and the reduced number of that Board, causing a large number of meetings to be necessary in order to get through the business which had to be performed. The number of persons who have been examined in the different sections have been very large, amounting in the whole to over 1000; but, although the expense to the Society on this head has been greatly increased, the receipts have been also enlarged, and the fees from candidates have resulted in a benefit to the credit of the Society of something like £3000. The report refers to certain changes which have been made in the constitution of the Board of Examiners. Hitherto it has consisted of members drawn alike from the general body of the Society and from members of the Council; but under the new bye-laws, and the Act, this state of things can no longer exist, and any future Board of Examiners will be drawn exclusively from those members of the Society who are not, and have not been for twelve months previously, members of the Council. This is an element which, I believe, will be very salutary in its results, as it will give the Board a greater independence and freedom of action than heretofore. But in connection with this change I must notice one fact,—which I personally cannot but regret,—and that is this, that it will withdraw from your future Council two gentlemen whose wisdom and advice have been of the greatest value. Whilst regretting, however, that your future Council will be deprived of their assistance, I must say it is a subject of congratulation to this Society, and to the members at large, that the Board of Examiners will have the opportunity of retaining the valuable services of Mr. Carteighe and Mr. Ince. The Report refers to certain changes made in conducting the examinations. It is found that the old method of conducting the preliminary or classical examination was imperfect;

that, in fact, that examination was almost a dead letter, and in rearranging the examinations, this subject has been very carefully considered. In founding the byelaws of the Society, it was provided that this preliminary examination should constitute an absolute precursor of all the other examinations, and not only for the good of the candidate, but also to save vexatious disappointment to the examiners, it has been insisted upon as a necessity in all cases. I believe this change will, more than all others, tend to elevate and improve the condition of our profession. The mode of conducting this part of our examinations is that adopted in the case of the Local University Examinations, and is calculated to secure the greatest uniformity and fairness of dealing to all parties. The result is determined by the duly appointed examiners in London, although upon the local secretaries devolves the duty of seeing that the candidates are fairly dealt by, and deal fairly with their papers. Though the duties cannot be very onerous they are very important, and the responsibility should be agreeable. It is a matter of congratulation that the duties of the Board of Examiners have been carried on under the eye of a representative of the Privy Council, who has most carefully watched the course of the examinations in behalf of the candidates and the public; and I believe I have this gentleman's authority for stating that he considers the examinations to be as perfect as circumstances will permit, the proportion of rejections proving, on the one hand, that the examinations are set low enough to meet the existing condition of pharmaceutical education, high enough to exclude all that is unsafe, and not so high as to exclude deserving worth and practical merit. The educational establishment, which has been one of the features of the Society from its foundation, has always proved an expense to the Society. It has ever been the policy of the Society to provide efficient pharmaceutical education at the smallest possible cost to the students; and, while at the present day our school furnishes the most complete opportunities for obtaining a thorough knowledge of the art and science of pharmacy, it does so at a cost to the student which, in comparison to the other schools, is remarkably small. The Report, however, informs us of a large increase of students, and the crowding up of the Laboratory to such an extent as to render the erection of additional benches and other re-arrangements perfectly necessary. All this is very well, and it is satisfactory to see the Lecture Theatre and Laboratories well filled; but is it a right condition of things to perpetuate that the Society, now it is entrusted with new powers, should be at one and the same time an educating and examining body? My answer to this is, that it is not, and that the time is fast approaching when a severance must be made of the examining from the educating functions. I trust, however, whenever the time arrives, the educational will not be so riven from the examining functions as to throw it on to private enterprise; and I confess I look to the time when the nucleus of the school we have reared will be converted into a duly and properly and wisely organized collegiate establishment with endowed chairs, and a governing board independent of all mercenary considerations in its control. Indeed, I see no better mode of appropriating the increasing realized property of the Society than in the endowment of such a College of Pharmacy. Our schools have annually cost us an average of £400 to £500, which income, if derived from the funded capital of the Society, would amply serve the purpose, augmented by a proportion of students' fees. The Journal, as represented in the balance-sheet, shows a loss to the Society of £31. 18*s*. 8*d*. instead of a balance to credit of some £200 or £300; but this must not be taken as the absolute facts of the case, for we should carry to the credit of the Journal account the cost value of the 800 odd copies which have gone into the hands of new members and associates. If this be done, then the Journal account shows a balance to the credit of the Society of £470, which may be taken to be satisfactory. In compliance with the recommendation of a Special Committee of Inquiry, and with a very generally expressed desire for more early record of the proceedings of the Society, it has been wisely, I think, decided to publish the Journal weekly, and after July 1st the Journal will appear every Saturday, containing half as much matter as the present Journal in each issue, and, therefore, will give double the quantity of matter per month. It is to be hoped that these increased advantages will induce first-class pharmaciens to contribute of their stores of knowledge, so as to make the new issue thoroughly successful. The Council has said nothing in its Report of the evening meetings, and advisedly, for it could have said so very little. More original investigations and experience are wanted, but so long as the vast body of the members exercise total abstinence in the matter of monthly meetings, it cannot be expected the first-class men of the profession will expend their time in addressing empty benches. I will not refer now to the proposed regulations for storing poisons; it will be my duty specially to bring this matter before you by-and-by; and in asking you to adopt the Annual Report of the Council, I want it to be clearly understood that the meeting will not commit themselves in any way to these regulations. The clause in the Report has been carefully worded, so that it need not commit the meeting, either one way or the other. I will therefore defer, and ask gentlemen, in speaking to the Report, to defer any observations on that point until it is brought officially before the meeting. I cannot close my remarks without referring to one subject, which could not be referred to in the Report, but on which I venture to express my own personal feeling, and, I think, I shall carry the hearty sympathy of the meeting with me when I say with how great grief I notice that the future Council, however otherwise constituted, will lack the experienced wisdom of so many good and staunch friends of the cause of pharmacy. Of Messrs. Ince and Carteighe I have already spoken: they have proved most valuable councillors, and leave the Board that they may be enabled to devote their high talents in another sphere of the Society's work—in a sphere where their special qualities can perhaps more effectively render good service to the Society; but to see the other good names conspicuous by their absence from the list of candidates for re-election is most painful. It is at all times painful to see old and tried friends dropping out of the ranks, but especially so such men as Randall, Orridge, Morson, and Squire, who have all for years displayed a devotion to the welfare of the Society, known best to those who have worked, shoulder to shoulder, with them. But of the last two how shall I speak? Both have held office, the one with slight intermission, the other without any, since the foundation of the Society, and both have been most intimately associated with every movement of the Society, and both have most eminently assisted every progressive movement onwards. In conclusion, I beg to move "That the Report of the Council, now read, be received and adopted, and published in the Society's Journal and Transactions."

Mr. Carteighe seconded the motion.

Mr. Jameson (Reading) said there was one thing which it would be well to consider, and that was, whether the examination, to which allusion had been made, for the rising generation, those who had been for the last three years in the business, was not a little too stringent. He must say that in the town he represented, it had driven something like a dozen young men out of the business, and the great difficulty was, that it acted retrospectively, these persons not having entered upon the business with the knowledge that they would have to pass this severe examination; he would therefore suggest that the Modified examination should be a little extended to those who had been three years in the business, not drawing the line at twenty-one years of age, but to all who had been that time engaged in it, whether assistants, apprentices or not, so that all the hopes with which they had entered upon an employment for life should not be frustrated. He had had many cases of this kind brought before him, and in the last number of the Pharmaceutical Journal he noticed a letter to the same effect, very properly worded, and he hoped that this matter would receive the consideration of the Council. The last preliminary examination was a very severe one; in fact, he should have been sorry to have had to pass it in his time, and was doubtful whether he could have done so. He felt, therefore, very much that, as a member of the Society, he was pressing rather hardly upon some of these young men.

Mr. Wilkinson (Manchester) said he could go a great deal with what had been said by the last speaker. He did not think the examiners considered the circumstances in which the young men were placed who came before them; many of them were from nineteen to twenty-two and twenty-three years of age, who had entered upon the business six or seven years ago, long before any examination at all was calculated upon, and some of them had received, perhaps, a very imperfect education, whilst from the circumstances in which they were now placed, they had very little, or scarcely any opportunity of improving their knowledge of Latin, English Grammar, composition, and arithmetic. Many a young man of this class would begin at seven o'clock in the morning by sweeping out the shop, then he would go on to cleaning palette-knives, mixing paint, making horse-balls, preparing cow-drinks, powdering saltpetre, and now and then he might have four or five bottles of blacking to fill up, seal, and label. This would go on until nine o'clock at night, when the shop was closed, and, after that, if he sat down to

Latin Grammar or Cæsar's Commentaries, he would be much more likely to fall asleep than to learn much. He did not think the examination was at all too hard for a lad who had just left school; but when a young man had been four or five years engaged in such work as he had described, he would very likely have forgotten much of what he had learnt, and this circumstance should be taken into consideration, and such young men be allowed to pass with a very moderate knowledge of Latin; he would, therefore, suggest that the local Secretaries should be allowed to state on the examination papers something about the young men; for he believed the examiners in London did not know either their ages or circumstances; he had had upwards of twenty of this class of persons before him, about half of whom had been rejected; whereas he was quite certain that if he had been the examiner, some of them, at any rate, would have passed, for they had quite sufficient knowledge of Latin for the ordinary purposes of business.

Mr. Ince said he should like to ask, really for the sake of information, what sort of preliminary examination was suggested, because it was an extremely difficult question to answer. There was really no considerable amount of Latin required; and he should like to know what was the real opinion of the members upon this point.

Mr. Brereton said he thought this matter might be very properly left with the Council. If a man who had been in the profession three years could not pass the Modified examination, he was not fit to mix in ordinary society. The work which had been spoken of by one gentleman was only fit for porters, and ought not to be performed by a learned body of men.

Mr. Urwick thought the Council ought to make the Preliminary examination as stringent as possible for lads of fifteen or sixteen, who had just left school; and if they could not pass, let them be shut out of the Society, but he did think that, in some cases, a little indulgence should be shown to the class of persons who had been mentioned, who had entered the business with no idea of having to pass such an examination, or having such a test imposed upon them. He believed, however, that leniency had been shown to this class by the institution of the Modified examination; whether or not that should still be kept open any longer, he thought, might be left to the Council.

Mr. Horton (Liverpool) said as a member of the Society, who had passed all the examinations, he could say that mixing cow-drinks and horse-balls, and such-like operations had never done him any harm, or prevented him qualifying himself for becoming a member of the Society. He looked upon the Modified examination as a mere nothing, and if men could not pass that, they ought not to be admitted.

Mr. Jameson said all he asked was, that the Modified examination should be extended to meet the case of the young men he had spoken of.

Mr. Balkwill (Plymouth) said perhaps they were all a little impatient for the day when none but thoroughly qualified men should be in the business; but, at the same time, he thought some consideration should be shown for those who had entered it a few years ago, who were not so thoroughly up to the mark as they should be. They must look a little at those who had had few or no opportunities for studying Latin, and there were many such, some in town, but more in country places, and if these lads were now to be called upon to study Latin, so as to be able to read any three or four chance sentences from Cæsar, they would have to go back again to their schoolbooks entirely. He thought it would be a good plan if in the examination of such lads, who had been in the trade some little time, the Latin sentences chosen should be those which were in ordinary use in connection with prescriptions, such as were to be found in the old London Pharmacopœia. In that way their attention would be drawn to that which would be practically useful, and not diverted from that which was connected with their business to that which belonged to a liberal education.

Mr. Chapman (Chipping Ongar) said one gentleman had said that certain things were only porter's work, but he feared he had little sympathy with the country trade. He (Mr. Chapman) was the son of a London druggist, and knew what the London trade was, but he also knew what it was to conduct a druggist's business in the country; and even at the present time he was obliged to do a great deal of porter's work, and to work hard for comparatively small pay. With reference to the Modified examination, he would plead for its extension; and he knew a young man at that moment who had been five years actively engaged in the trade, and who would go in for such an examination, if it were open to him, but he felt that the more stringent Preliminary examination, as now conducted, would completely shut him out. He thought such men might have a little amount of leniency shown them, and that they might be allowed to pass the Modified examination. The whole of his experience before going into the country was in a first-class West-end trade, and he fancied the gentleman who spoke about porter's work must be one of those lucky individuals in that class of trade who was able to make very good profits. He should be very glad to delegate a great part of the work he was obliged to do to a porter, but his profits would not admit of it.

Mr. Rimmington (Bradford) said this point was a rather delicate one to deal with, for justice had to be done on two sides of the question. Every one would be desirous of doing justice to those who were excluded from entering the business on account of the Preliminary examination, but, on the other hand, justice must be done to those who had taken the trouble to qualify themselves for such an examination. It was useless to examine a difficulty from one side only, and it would not be fair to those who had been at great expense and trouble in studying, to admit at the same time others who were not qualified. This was a very spurious sort of liberality; and, therefore, he thought the advocates of a too generous policy should temper their views a little. At the same time he believed it was competent to the Examiners to modify the examination according to circumstances, and he believed they did so to a certain extent. He thought unless they were rigorously to carry out the examination as a general rule, it would be unjust to those who did pass, and that the trade which they had been so long striving to elevate and improve would remain for fifty years to come *in statu quo*.

Mr. L. B. Ross (Driffield) said he had had the honour of appearing before the Examiners at each examination, and had not found any great difficulty in passing, though he himself had been brought up in the country trade. He had made horse-balls, and powders, and ground saltpetre, and done all that sort of thing, but it had never interfered with his studies; he had always found half an hour or an hour in which to improve his mind, and after coming up to London and attending the classes for a few months, he was able to pass the examination. He should, therefore, be very sorry if they were made less stringent than they were at present.

Mr. Dickinson thought too much time was being spent on this point, and that they were really losing sight of the business of the meeting. This educational question was no surprise to any one, for it had been talked of ever since the foundation of the Society; and hardly a session of Parliament had passed without their being threatened with some stringent regulations with regard to the trade of Chemists and Druggists. The Chairman had begun by saying that the object of the Society was to ameliorate the condition of Chemists and Druggists at large. He did not dwell much upon that word; and he (Mr. Dickinson) was at a loss to understand what he meant by ameliorating their position, for it appeared to him, after about thirty-five years' experience, that the condition of Chemists and Druggists was very much what it was before, and that they still had to do a vast deal of hard work if they wished to keep their position at all. With regard to these scientific qualifications, his experience was, that those gentlemen who had attained the highest distinction in scientific subjects had very often been the first to fail in business. Again, the Chairman had alluded to the Founder's object, and the same remarks would apply to that. He said one object was to unite them together, and they were probably more united than formerly; but he did not know that they were more united for the good of the trade, or that they did themselves much good by the unity. However, they were now united, and what had been the result? The conclusion of the Chairman's remarks was that this Society had made money, that it had accumulated a certain amount of money in its coffers, and what a great thing that was; and then he proposed the establishment of a College of Pharmacy. He (Mr. Dickinson) was pretty nearly going off the stage himself, and that would probably be his last appearance there; but as a man of business, he considered that in elevating the members so much, and in establishing this College of Pharmacy, they would be driving the best part of the trade away from the shops, and after all, it was by that they had to get their living. With regard to education, he would repeat it was no surprise at all, and if he had been in the ranks of the assistants he should have been prepared for it long ago; but they might easily evade the trammels of education. He held in his hand something emanating from a society, limited, consisting of eight registered members, who were trading as chemists and druggists, and taking the best portion of trade of this metropolis into their hands. He alluded to the Civil Service Co-operative Society. These eight gentlemen registered themselves as the proprietors of this Civil Service Co-operative

Society, Limited, not one of whom was a chemist and druggist, not even according to the Pharmacy Act; and as to being pharmaceutical chemists, it never entered into their imagination. But see how successful they were. They managed to evade the Act by employing a Mr. W. J. Jones, a chemist and druggist. No doubt he had passed the Modified examination, very modified, and he understood that he was making a capital thing of it, that he was employing two first-class dispensing assistants under him and a large staff, that they were doing a roaring trade, and that they would do a great deal more yet. His friend Mr. Pound would tell them something about this Mr. Jones, who was, to all intents and purposes, a legitimate member of this Society. They were permitting him to use the name of this Society, to evade the Act of Parliament, and to take away the trade from themselves; and that in a way which was very injurious and annoying to those gentlemen who wished to carry on their trade with respectability. He did not object to anybody going to a co-operative store if they liked, but he would tell them a very important fact with regard to these societies, as connected with trade generally and with chemists in particular. This society had recently issued a report which showed a gross return of £350,000 per annum; whereas any ordinary trader who made a return of £5000 per annum was considered to do a good business, and with 20 per cent. he would be able to make a fair living, pay rates and taxes, and keep his family respectably. Dividing this amount by 5000 they got 70; so that that represented 70 shops shut up, 70 families prevented being brought up, 70 persons made assistants, or whatever they pleased, instead of being respectable tradesmen. That was the result. As to themselves, what came of all this education? The Society had already driven from a great many respectable chemists the best part of their trade. Photographic chemicals and various other matters were sold without let or hindrance, and were a considerable source of profit; but many purchasers would not go now to a pharmaceutical chemist, because of the trammels of the Pharmacy Act requiring them to sign documents and all sorts of things; the consequence was they preferred going to the oilshop round the corner, or the drysalters, where they could buy what they wanted without difficulty. He had no objection to these things himself, for he carried on the legitimate trade of a dispensing chemist, and had done so all his life; but at the same time he had some sympathy for others. He had served his time in the country, and had lived in Manchester, Liverpool, and other provincial towns, and could sympathize with those who saw very few prescriptions in the course of the year, the majority of whose trade consisted of articles at 8*s*. a dozen, which were put up and sold for 12*s*. retail. What had been the result of all the late proceedings? The majority of the sundry trades which many men got their living by, was driven away to the oilshops and the grocers, who sold the same articles at tenpence each instead of sticking out for the shilling. The other day he went into another co-operative store in Long Acre; it was a very magnificent establishment, and though they did not yet dispense medicines, it would not be long before they did.

The CHAIRMAN suggested that this matter did not arise out of the Report, and must appeal to the meeting whether it should be gone into or not.

Several gentlemen having expressed their opinion in favour of hearing Mr. Dickinson,

Mr. WATTS suggested that the Report should be first put and carried. He had himself something to say upon the matter of co-operative stores, and thought it had better come afterwards.

Mr. DICKINSON said he was quite willing to submit to the opinion of the meeting. He had no personal motive in the matter at all, and he had lived long enough, he believed, amongst the gentlemen whom he saw around him for this to be pretty well known. This was the only time of the year when they had an opportunity of meeting and ventilating their grievances; and if they were too weak and quiet in giving way to rules and regulations, they would never get them redressed at all. He for one protested against it, and he believed he was perfectly in order in the course of his remarks. He had no objection to co-operative dealing, but he was very glad to find that one member of the trade, Mr. Starkie, had come to his senses and retracted the position, rather an unfortunate one, which he had got into, more, he believed, from accident than design. He did not say he was wrong in his former position, but that he was doing injustice to the trade, and, as such, he ought to be an outcast from the Society; and he contended that anybody who patronized or permitted the co-operative store dealings by their assistance or trading, ought not to be allowed within the pale of the Society. This was no new idea of his; he believed that gentlemen in the wholesale trade had no business sitting at the Council. He had said so before, and he now repeated it, probably for the last time, that wholesale gentlemen had better be in their counting-houses instead of interfering with what the retail trade perfectly well understood, or, if they did not, they would try. They were too old now to be patronized in that way. He had brought this matter forward before, as Mr. Bremridge could bear witness; and, to bring the matter to an issue, he believed the document which he had submitted had been laid before Mr. Flux, but he regretted to find that the Society had no power. The Act of Parliament was so worded that they had no power to touch these gentlemen, who were not Pharmaceutical Chemists, and consequently any one might go to-morrow and start anything they pleased, calling it a Legal Co-operative Store or an Undertakers' Co-operative Store if they liked, and then they would double their business, because, after killing their clients, they could bury them: by employing some "modified" gentleman, and putting on the bottles "Dispensed for the Civil Service Co-operative Society, Limited, 28, Haymarket, by W. J. Jones, Chemist and Druggist," all difficulty would be got over. They might give a man like that about £100 a year, and he would think himself well paid; and in that way eight gentlemen with capital might go and swamp the whole trade. After all the efforts to ameliorate their condition, and all that sort of thing, that was what the Pharmaceutical Society had come to. It was a shadow and an illusion; and as to the Pharmacy Act, it was evident that anybody could drive a coach and four through it. He believed other gentlemen present were prepared to go into this matter, and he had simply come down to see that they had fair play; but he had been led by the strength of his feeling on the matter to go into it at greater length than he had intended.

Mr. SCHACHT (Clifton) said he understood, from an observation which had been made, that this subject would be gone into more fully at a later period, and, therefore, he would beg leave, as a country member, to advert to a subject which interested him more than this one, although it had, no doubt, its legitimate attractions for gentlemen resident in London. He particularly wished to raise a discussion on a question, which not only he, but a great number of other members were interested in, viz. the aid which the Society afforded to the cause of the scientific education of the body. He need not enter into the question of whether it was or was not the duty of the Society to engage in this work. The history of the Society showed that every Council, as it had succeeded its predecessors, had made this a fundamental part of their operations: and they all knew that a very large sum of money had been annually devoted to this purpose. If any corroboration of this statement were required, he need only refer to the present Report, which contained several statements on the subject; and in reference to them, he would ask leave to quote a few words of his own, his excuse for doing which must be, that the figures had been published some six months, and, as far as he knew, their accuracy had not been in the least degree challenged. The sentence which he was about to quote was read at the last Pharmaceutical Conference, and was to this effect:—"I find upon the authority of the Register lately issued in accordance with the provisions of the Pharmacy Act, that there are 10,184 master Chemists and Druggists in England and Wales. The proportion which the Assistants and Apprentices bear to the principals is a little difficult to determine absolutely, but, from the evidence of a few lists I have made of their exact numbers in places of somewhat varied character, I come to the conclusion to estimate them as 1⅓ to 1. This would give the number of the Assistants and Apprentices, or the student class of our body, as I shall call them, as 13,578. Again, I estimate the average length of time a young man remains in the ranks of this class (taking into account the chances of his removal by death, by change of occupation, and by promotion to the rank of master) to be about eight years. Hence these 13,578 are renewed every eight years, in other words, an average of 1693 fresh young men are *annually* entering the business. In the future, therefore, when matters have settled into their normal working, we may expect to have to provide opportunities for scientific instruction for about this number (1693) annually. But in the meantime it must be remembered, that a large proportion of the *existing* student class (the 13,578) have never yet been scientifically educated, and that they will be pressing for opportunities also. What that proportion may be I have but few data to judge from, but if it be only half, then 6789, whose need is urgent, must, for the present, be added to the list, raising the number of probable annual applicants to about 3000." Having read this, he would once more refer to the paragraph in the Report, which stated that the Council congratulated itself upon the fact, that they had been able, with the appliances at their command, to educate 96 pupils. It was clear, therefore, to him, that the scheme hitherto adopted by the Society for carrying out scientific education failed largely, although a very heavy sum was expended. He thought, therefore, it was time that this state of things should be thoroughly looked into. The Chairman had himself hinted that it had not been lost sight of by those who governed the Society; but the current of his observations seemed to show that the direction in which it was supposed possible that advance might be made, was in the exaltation of that establishment. It was a disagreeable thing to have to make any observation, however distant it might seem to be, regarding a system with which were connected so many gentlemen for whom they had the highest regard and respect; but he had very long felt that there was an anomaly in the fact, that whilst so large a proportion of the income of the Society was derived from the country generally, the sole direct benefits conferred were lavished upon an establishment which, after all, must be enjoyed almost exclusively by those who lived in London. Of course, that was almost inevitable, and, as far as the past was concerned, one would wish to make no complaint; he had no doubt the course which had been pursued by the Society had been the very best which could have been adopted in times past, and when they were simply a voluntary Society, they were, of course, at perfect liberty to do what they thought fit with the funds at their disposal. But within the last few years, the position of the Society had become very different: they had now certain trusts committed to their charge, and amongst them that very important one, the power of admitting or refusing individuals to secure the benefits of the trade. That being the case, it imposed a barrier to the entrance of many who were not qualified, and, therefore, it must become more and more their duty to do something to provide opportunities for those persons to acquire such qualifications as they were compelled now to possess, before they were allowed to enter the trade. At the same time that they prohibited young men from entering unless properly qualified, they ought to be able to say to them, We will give you, as far as we can, such opportunities as are necessary for enabling you to acquire those qualifications which are necessary. If that were so, it was clear that these advantages should not be conferred exclusively on one community, however important and worthy it might be. His object at present was simply to draw attention to the subject, although he was prepared to propose a resolution, if it were thought desirable to do so. He had no scheme to offer at present, thinking that such a subject, being for the first time introduced at an annual meeting, had better be more suggestive than anything else; and he should, therefore, propose, if it met with the approval of the meeting, merely an abstract resolution recommending the subject to the earnest consideration of the Council. It would be simply to the effect, "That this meeting is of opinion that the means hitherto adopted by the Society to supply the educational wants of its members are no longer adequate to the necessities of the times, and it respectfully urges upon the new Council the desirability of framing some scheme by which the resources available for such purposes may be distributed generally over the country, rather than concentrated upon one particular school." He hoped no gentleman would suppose that he intended to imply the least atom of disrespect to the present educational institution; on the contrary, he had the highest regard for it, having been one of its earliest pupils, and, as he believed, reaped great benefit from attending for ten months within its walls. That was quite another question. The broad issue he raised was, whether it was not now desirable, under the altered circumstances of the trade, that, in future, all means which they had available for the purpose of scientific instruction, should be distributed over the country at large.

The Chairman thought such a motion had better be reserved until after the special business had been concluded.

Mr. Mackay said a paragraph in the Report alluded to the forthcoming change in the mode of publishing the Journal, and he would therefore ask leave to make a few remarks upon this subject. So many were now interested in the success of this production that it might not be out of place to review shortly its past and present position. With regard to its merits and standing as a scientific publication, he need say nothing, for thirty volumes were now all but completed of a work which he might safely say had deservedly taken its stand side by side with any home or foreign publication of a kindred nature.

He was aware that fears were entertained by many country members that the anticipated change in the mode of publication would prove almost ruinous in a financial point of view, and he had therefore drawn up a tabular statement, showing the receipts and expenditure since the commencement, which was as follows:—

Tabular View of the Cost of the Journal to the Society from its Commencement in 1841 till December 1869, being the date of the last Financial Statement.

Date.		Cost.			Delivering.			Total Cost.			Members, etc.
		£.	s.	d.	£.	s.	d.	£.	s.	d.	
1842.	March 31	390	0	0	5	5	0	395	5	0	1960.
		(This represents only part of a year.)									
1842.	December 31	1050	0	0	28	10	3	1078	10	3	3956.
1843.	Ditto	1200	0	0	98	1	2	1298	1	2	3663.
1844.	Ditto	1162	10	0	84	12	4	1247	2	4	3114.
1845.	Ditto	900	0	0	101	11	3	1001	11	3	3108.
1846.	Ditto	797	10	0	189	5	8	986	15	8	2936.
1847.	Ditto	675	0	0	151	10	0	826	10	0	2769.
1848.	Ditto	675	0	0	153	18	10	828	18	10	2578.
1849.	Ditto	675	0	0	151	14	0	826	14	0	2041.
1850.	Ditto	615	0	0	151	4	0	766	4	0	2304.
1851.	Ditto	561	3	9	151	4	0	712	7	9	2177.
1852.	Ditto	573	2	6	87	11	8	660	14	2	2293.
1853.	Ditto	722	16	3	68	17	0	791	13	3	2362.
1854.	Ditto	944	7	6	77	12	0	1021	19	6	3068.
1855.	Ditto	700	0	0	121	9	6	821	9	6	2351.
		(Sales of Journal this year, £4. 1s.)									
1856.	Ditto	662	10	0	181	12	3	844	2	3	2662.
		(Sales of Journal this year £4. 14s. 6d.)									
1857.	Ditto	561	18	2	184	12	6	746	5	8	2504.
		(Sales of Journal this year £1. 18s.)									
1858.	Ditto	712	2	11	177	3	6	889	6	5	2377.
		(Journals sold this year, £4. 4s.)									
1859.	Ditto	862	7	5	171	19	0	1034	6	5	2275.
		(Journals sold this year, £6. 18s.)									
1860.	Ditto	599	10	3				599	10	3	2107.
		(This represents the first volume of the New Series.)									
1861.	Ditto	608	12	3				608	12	3	2014.
1862.	Ditto	173	13	4				173	13	4	1942.
1863.	Ditto	70	7	5				70	7	5	1940.
1864.	Ditto	47	8	9				47	8	9	1967.
		Profit.									
1865.	Ditto	50	10	8							2044.
1866.	Ditto	218	5	5							2108.
1867.	Ditto	296	14	7							2143.
1868.	Ditto	332	4	7							2196.
1869.	Ditto	67	14	10							2339.

This amount of profit was more than absorbed by the expenses in preparing, printing, and publishing an index, comprehending twelve volumes of the Journal, and which cost in all £99. 18s. 6*d*.

This showed that up to 1859, when Mr. Jacob Bell made over the Journal to the Society, there was an average expenditure of between £700 and £800 for journals and delivery. In 1860 this was reduced to £599. 10*s*. 3*d*., including postage, and in 1861, when the attention of the Council was drawn to the valuable nature of the property, owing to the steps taken in consequence, the balance against the Society was reduced to £173. 13*s*. 4*d*. 1865 was the turning-point, when there was a small profit, though 2044 members and associates were supplied with copies gratuitously, and it went on increasing up to 1868. In 1869 also, there was a much larger profit than appeared, a large amount having been swamped in producing the index. From the table it appeared that since the Journal had been officially connected with the Society, no fewer than

72,878 members, associates, and apprentices had been supplied with it monthly at an aggregate cost of £18,182. 4s. 5d., and the number of copies circulated was 886,586. The average yearly cost, including the few profitable years, was £604, and the average number of persons connected with the Society who were supplied gratuitously, 2462; so that the cost per copy was about 4¾d. The conclusion he arrived at, therefore, was that it could scarcely be unsafe to venture upon a change in the frequency of publication. He was aware that some extreme views were held on the subject, many believing that a large profit would at once accrue to the Society, and others that the increased expense would half ruin their exchequer; but he could agree with neither. Everything must have a beginning, and he did not anticipate any profit from the publishing account in the first year, but rather that during the first and second years of its infancy it would add £200 or £300 to the average cost which he had already mentioned; but after that he believed the income would be considerable, if it were so conducted as to meet all the requirements of the present age. There was also this to be said, that the Chancellor of the Exchequer seemed almost to have known of their intentions, for by the alteration in the rate of postage for printed matter, each weekly number would cost only one halfpenny, so that the total postage per month would be no more than at present. He had so long taken a deep interest in the success of the 'Pharmaceutical Journal,' that he was anxious all members of the Society should know some of the particulars of its past history. He believed they would then be more inclined to appreciate and approve the motives of the Council in introducing the contemplated change; and in conclusion, he would venture to express a hope that in the future as in the past, they might hear men of high scientific position and attainment exclaim, as he had heard them, "If the Pharmaceutical Society had done nothing more than give to the world its well-conducted and valuable Journal, it would have been worthy of all encouragement and praise."

Mr. MALTBY (Lincoln) said he was not going to comment on any paragraph in the Report, but rather to complain of an omission in it. Now that there was so much larger a proportion of support received from the country, he had expected that there would have been some reference made to a fairer representation of the provincial trade at the governing body. There were 1480 country members against 364 in London, but on the other hand, there were twice as many London as country representatives.

Mr. WAUGH said complaints had been made of the stringency of the examinations, and he must not therefore forget the courtesy of his brethren, by which he had been allowed to become a member without passing any examination, though he had to prove, by giving evidence of good principle, integrity, and singleness of motive, that he was fit to be called a volunteer in this good cause. God forbid, therefore, that he should advocate putting the screw on any worthy man, whatever his age, who came forward to pass the Modified examination; but he would caution the Council to steel their hearts against all appeals for leniency in the case of young men now coming forward to enter the profession. And he said this in the interest of the young men themselves. One gentleman had objected that if they were too strict, it would have the effect of sending them back to their books,—and where else should they be sent? If ever the Society were to attain the position which it was fitted, and now promised to attain, it would only be by insisting upon a rigid examination in the case of all young men entering the trade.

The CHAIRMAN said with reference to the Modified examination being too strict, or not sufficient lenity being shown by the Examiners, he would simply say, from his own personal observation, and he might also speak on behalf of the representative of the Privy Council, that no really safe man had been known to be rejected. What was the real test in every case? not a man's knowledge of Latin, but his being practically safe behind the counter. It was actually modified to that extent. Exception had also been taken to the severity of the Preliminary examination in the case of young men of one or two-and-twenty; but the result of these examinations showed that while 40 per cent. were rejected, the average of their ages was under eighteen. In fact, they were in most cases boys who could well afford to go back and spend some further time upon their books. It had been suggested that medical Latin should be introduced instead of Cæsar, but this had been already done in the last two examinations, the candidate having the option of choosing between a quotation from the old London Pharmacopœia and a piece of classical Latin. Mr. Chapman pleaded for an extension of the Modified examinations to young men, but it must be remembered that, however anxious the Council might be to do so, they had no power in the matter, being governed by the Act of Parliament, which drew a strict line beyond which they could not go. The scheme of the Modified examination was drawn up by the Board of Examiners, but it had to be approved by the Privy Council, under whose directions they had to act to a certain extent.

The motion was then put to the meeting and carried.

The CHAIRMAN then said, It is now my duty, gentlemen, to bring before you the regulations which have been proposed by the Council in deference to the authority, and in fulfilment of the duty imposed upon them by the Act of Parliament; and in considering this very important subject, I must beg your attention while I recall the circumstances under which the Pharmacy Act of 1868 was carried through Parliament. It must be remembered that the constant aim of the Pharmaceutical Society, since its foundation, has been the elevation of the social status of the trade by means of improved education and the consolidation of the trade into a legally constituted guild upon the basis of an educational test. With this object in view, year by year and period by period, agitation was renewed in Parliament to obtain the necessary recognition and powers; but Parliament invariably met the question in the light only of poison regulations. In the course of time some little was gained in the way of Parliamentary recognition of qualification, tested by voluntary examination, and by tardy steps a Committee of the House was obtained to inquire into the whole question of Pharmacy as practised in this country. The result of that inquiry, as all will remember, was the recommendation to the House of a Poison Bill. The necessity for regulations in regard to the keeping and dispensing of poisons thoroughly imbued the House, the Government, and the Medical Council. It will be fresh in the memories of those who two years ago worked on the Parliamentary Committee, how hard a battle had to be fought in the House against the Medical Department of the Privy Council on the one hand, and the Medical Council on the other, both of which bodies were eager to obtain the power of legislating in the matter of poisons, and it was only by dint of the greatest watchfulness and diplomacy that the Pharmaceutical Society secured to itself the powers which were thus sought to be wrested from it. And how did it succeed? The Parliament and Government were determined to have poison regulations. The Society was equally determined to secure, if possible, compulsory examination as the test of educational qualifications. A quasi compromise was the result; we virtually undertook to carry out, practically, what was very well known to be the intention of the Government and Parliament in the matter of poisons. We accepted a Poison Bill as the basis of compulsory powers, securing what we have always contended, and do still contend, is the only true security against accident—an improved educational standard for those entering the trade. The importance placed by Parliament upon the responsibility thus accepted, is evinced by its forming the burthen of the very first clause of the Act. The clause is as follows:—"From and after the 31st day of December, 1868, it shall be unlawful for any person to sell or keep open shop for retailing, dispensing, or compounding poisons, or to assume or use the title Chemist and Druggist, unless such person shall be a Pharmaceutical Chemist or a Chemist and Druggist within the meaning of this Act, and be registered under this Act, and conform to such regulations as to the keeping, dispensing, and selling of such poisons as may from time to time be prescribed by the Pharmaceutical Society with the consent of the Privy Council." This clause, undoubtedly, imposes upon the Society the duty of doing that which Parliament had determined after careful investigation in committee, was necessary, and in this view of the matter your Council anxiously undertook the construction of such a code of regulations as would prove in practice the most accommodating to the necessities of every description of trade and every circumstance of practice. With regard to the practical working of the regulations now proposed, I will leave it to more able hands to elucidate. I will, however, say this, that I cannot, for myself, see any practical difficulty in the way of their adoption, and, I fail to gather from all the protests which have been sent up, any more logical objection to them than that of perhaps a natural dislike to being compelled to submit to any special code. Nevertheless, the Act which we have accepted imposes this necessity upon us, and it is a question for this meeting seriously to consider the responsibility it would incur if it rejected these regulations or failed to adopt any. Would not such an act be construed by the Government as a deliberate rejection of the first principles upon which the Act was granted? I think it would, and I should quite expect, under such circumstances, that finding we failed to carry out the intentions of Government, the defect would be made good by the summary adoption by Parliament of regulations which would prove far more irksome than these which most acknowledge to be practical, while rejecting them because of imagined coercion. I beg, therefore, to move:—

"That, by virtue and in exercise of all powers and authorities in this behalf, the Pharmaceutical Society of Great Britain do hereby resolve and prescribe that from and after the day , the following shall, within the meaning of the Pharmacy Act, 1868, be regulations as to the keeping, dispensing, and selling of poisons, *videlicet*:—

"1. In the keeping of poisons, each poison shall be kept in a box, bottle, vessel, or package, distinctly labelled with the name of the article and the word *Poison*.

"2. In the keeping of poisons, all or any or either of the following systems shall be used:—

> "I. The boxes, bottles, vessels, or packages, containing poison shall be kept apart from other boxes, bottles, vessels, or packages, and shall be so kept in an apartment, cupboard, compartment, or drawer, set apart for dangerous articles.
>
> *Or if not so kept apart.*
>
> "II. The bottles or vessels used in any shop or dispensary to contain poison shall be distinguishable to the touch, as by being angular, fluted, or corrugated, and shall be unlike the bottles or vessels used to contain articles which are *not* poisonous or dangerous, in the same shop or dispensary.
>
> *Or otherwise.*
>
> "III. The bottles or vessels used in any shop] or dispensary to contain poison shall be tied over, capped, or secured in a manner distinguishable from the way in which any bottles or vessels not used to contain poisonous or dangerous articles used in the same shop or dispensary may be tied over, capped, or secured.

"3. In dispensing and selling poisons, all liniments, embrocations, and lotions containing them shall be sent out or supplied in distinctive bottles, or bottles made distinctive; and labels, containing some word or words of caution, showing that the contents are not intended to be taken, in addition to the name of the compound or instructions for use, shall be affixed thereto."

These regulations are suggested to this meeting by the Council after very careful consideration, and it will be for the meeting either to adopt, reject, or modify them, as in its wisdom it sees fit. The power is not given to the Council to make anything of this sort obligatory; it is entirely delegated to the Society, and the Council have been most anxious that the feeling of the whole trade shall be consulted in this matter, and this is proved by their referring the discussion to the Annual Meeting. The Privy Council have rather urged this matter forward, and have been anxious that some regulations should be adopted at an earlier period, but the Council felt that the opinion of the trade could not really be so well obtained at any special meeting called for the purpose, and have, therefore, put it off for the last few months, in order that the feeling of the whole trade may be evoked, and that any decision come to shall be that of the trade at large, and not of the Council of the Society.

Mr. HASELDEN said he felt some diffidence in seconding the adoption of these regulations, knowing there would be objections offered to them from various quarters. However, from what he had heard and seen he believed the objections likely to be made were framed first upon a misconception of the regulations. It had been supposed, for instance, by some, that they would be obliged to adopt one of the three modes pointed out, but this was not so evidently; they might adopt either one of the three, or the whole, as best suited their convenience. Another objection was, that it would be impracticable to carry them out; he would not detain the meeting by going into details, but he had himself, during the last ten years, carried them out practically, more or less, in the ordinary conduct of his business, and had found no difficulty whatever in doing so. Then it was said that London members could know very little about the nature of the country trade; but with all deference to gentlemen who made use of that argument, he must say, having been for six months in a large provincial establishment, that he did not see what difficulty they could have in carrying out these regulations; and it must be borne in mind that something like one half of the London members came originally from the country, and must be supposed, therefore, to know something of the requirements of their provincial brethren. Again, it had been argued that it was folly to saddle themselves with regulations for which there was no necessity; but the answer to that was, that it was much better to saddle themselves than let anybody else do it. Lastly, he believed there was an impression abroad that the Council desired to force these regulations upon chemists, but he could say for himself, and he believed every member of the Council would say the same, that nothing was further from his mind. If the Council had entertained such a wish, they would certainly have taken means more likely to attain their object; for by suddenly calling a special meeting, in all probability not nearly so many members would have attended, and they might then have pushed a resolution through. His decided opinion was, that it would be for the benefit of the Society in the future, if not at the present moment, to adopt the suggested regulations.

Mr. Collins thought it would be very inconvenient for the meeting to discuss a string of resolutions which many of them had now heard for the first time. If they were taken *seriatim*, the discussion would not be so rambling and desultory, and they might come to something like a conclusion. Some of the proposed regulations might be assented to without difficulty, whilst to others there might be great objections, but at any rate he was glad to find that they were not bound to any one of the three modes, but might adopt the three combined. That, he thought, would remove one great difficulty. He himself had, from time to time, adopted some of these methods, they were no novelties, for he found it necessary to take precautions against mistakes; and therefore, as was frequently the case, they had poison cupboards, bottles properly labelled, and due caution given to assistants. He would move that the regulations be considered and assented to, or dissented from *seriatim*.

Mr. Boothby seconded the proposition, but on being put to the vote it was negatived, the meeting desiring to discuss the whole matter at once.

Mr. Dickinson said he was always disposed to pay great deference to the Council, but it was utterly impossible that all men could agree, and with respect to these proposed regulations they had already got, under the Pharmacy Act, quite sufficient to complain of. Personally he did not complain, because everything included in the schedule he declined to sell by retail, and he could put anything he liked in a prescription, if he entered it in his book. As to No. I., he ventured to say that all chemists and druggists adopted that now, and therefore there was no necessity for making a special regulation about it. Then with regard to No. II., he must say it was very kind of the Council to give them the option of adopting any particular means they thought proper; but all bottles, packages, etc. were to be kept apart in some place devoted to dangerous articles. In his youthful days he was very familiar with a story called Blue Beard; he did not know whether the Council intended them all to have an apartment like Blue Beard used to have in olden time; he hoped not, for fear some of the ladies would be getting there. But it certainly appeared to him that this regulation about a cupboard or apartment was perfectly superfluous; for no chemist or druggist who knew what he was about wanted any regulation of the kind. Then they went on and proposed that bottles should be made distinctive to the touch. He had read somewhere that a white and delicate hand was a great recommendation, but he did not think those who had to undergo the drudgery which some gentlemen had described, would have a very delicate touch. His experience was, that the more mechanical contrivances were introduced to prevent people using their common sense, the greater would be the danger. Then the third recommendation was, "that the bottles or vessels used in any shop or dispensary to contain poison shall be tied over, capped, or secured in a manner distinguishable from the way in which any bottles or vessels not used to contain poisonous or dangerous articles used in the same shop or dispensary may be tied over, capped, or secured." It did not say what was to be done when the bottles were uncapped; it seemed to him there ought to be a paragraph to tell the young men to be particular to put the cap on again; for he would venture to say that in nine cases out of a dozen the cap would be found kicking about the shop, when business happened to be pressing, and he did not see how this difficulty was to be got over. Then, lastly, they went on to say, "In dispensing and selling poisons, all liniments, embrocations, and lotions, containing them shall be sent out or supplied in distinctive bottles, or bottles made distinctive; and with labels containing some words of caution, showing that the contents are not intended to be taken." With regard to dispensing, he would venture to say that every man who dispensed poison took measures to indicate on the bottles what it was; but his experience as to red, blue, yellow, and white labels was this, that the public would only fancy the chemist wanted to advertise himself, and be different to his neighbours,—it would never strike them that the yellow label meant a liniment, and the blue label a lotion; they would require to be educated up to that point, and until this was done, it was all nonsense to talk about distinctive labels. It was only adding to the trouble of the dispenser, which, considering the remuneration he got for it, was quite sufficient already. He made these remarks, not with a view of throwing ridicule on the Council, but because he felt that a protest ought to be made against trammelling themselves with unnecessary regulations, if it could be avoided.

Mr. URWICK said he agreed with almost every word that had fallen from Mr. Dickinson, and, to show that he thought there was an evil in educating the public too much as to bottles and labels and so on, he would just relate a case which had occurred to himself within a short time. A lady consulted one of the leading physicians, and, as a matter of course, she was sent to have the prescription dispensed at one of the large houses. She went home with a lotion, and an ordinary prescription for a mixture was sent to him to dispense. The mixture was sent in to be taken immediately, but the servant, by mistake, gave her mistress the lotion because there was no coloured label on it, and it was not put in a lotion bottle. Of course they immediately came rushing over to him, when the mistake was discovered; but he said he had not dispensed the lotion, and a doctor had to be sent for. This showed the evil of putting too much upon chemists, and leading the public to trust wholly to what chemists were supposed to do. He therefore thought they could not take too strong a stand against this matter being legislated upon. Every chemist who used skill in his business had adopted one of the courses here suggested in carrying on his business, but he did object to having it said to him, You must do this or that. It might be practicable as far as London was concerned, but in the case of country houses it would be impossible to carry out these rules, where parties bought their arsenic by the hundredweight or ton, and other poisons in similar quantities. It would come practically to this, that they must have different legislation for London and the country. At first it was said that they must educate men, so as to enable them to read labels and prescriptions; but now it must come to this, that they must be educated in touch. What would be the next thing he could not say, but perhaps it would be something to enable blind men to dispense. The next thing would be that an inspector would be appointed to go to all the chemists' shops, and see that all the bottles were properly tied over and in their right cupboards. He thought that if men were taught to always read the labels carefully, they would be much less likely to go astray than by depending upon bottles being put in a particular place or cupboard.

Mr. BRADY said he felt some considerable embarrassment in speaking on a subject in which a resolution of the Council was brought forward as a basis of action, for he felt as if he might be accused of doing something uncourteous to his colleagues, or disloyal to the general body, in making any protest against a resolution which had been passed by a majority; and had the report of the meeting of the Council at which these poison resolutions were discussed been a little less vague than it was, he should have been bound to hold his peace, having protested against them on the Council. The report, however, although it did not say so, would lead any one to believe that no division had taken place, and that it had passed harmoniously and almost unanimously. That was not the fact, for a division was taken twice on this question. It happened that the clauses were taken *seriatim*; and, though the report of the Council meeting was only given *en masse*, Mr. Deane, Mr. Squire, and one or two others had objected strongly to the mode of this second clause in the third paragraph; and he felt more strongly now than ever the inadvisability of instituting anything like the regulations in these three divisions of the second paragraph. He had been looking through some back numbers of the 'Pharmaceutical Journal' to see what had been the course of poison legislation, and if they took the sixteenth and seventeenth volumes, which were issued at the time when, perhaps, there was more public excitement in connection with poison legislation than at any other period of their history,—arising out of the Rugeley murders, when strychnine was the fashionable domestic poison,—it would be found that nearly every number contained a leader on the question of restrictions on the sale of poison, and most of these bore the impress of Mr. Bell's writing. He then—and he was convinced that if he were alive at the present time he would adhere to the same view—could find no term strong enough to express the dislike which he had, and which the Society then had, to restricting legislation with respect to the keeping and storing of poisons. He said that this restrictive legislation was an insult to pharmaceutists; and he further suggested, in one article, that if any of the abortive Poison Bills were carried through Parliament, it would be necessary for the authorities in Scotland Yard to act on the plan which was adopted in France, of training dogs to hunt truffles, and they would have to train dogs to snuff out poisons in pharmacies.

Mr. Wilkinson begged to move an amendment to the resolution. He thought the whole course of legislation on this question had been one continued series of blunders. In the first place, it was a blunder to insist on a poison schedule being joined to the Pharmacy Act; it was a blunder when Parliament did combine these two things together, and it was a blunder on the part of the Council when they made the last addition to the schedule of poisons, because in the first place, in making that addition, they added a great number of preparations, and that very word "preparation" had been the great bugbear of the present schedule. Nobody knew what it meant. They were told that preparations of this, that, and the other, were included in the schedule, and were not to be sold except under certain restrictions. But the greatest mistake of all in the matter was the adding of vermin destroyers to the list of poisons in the schedule. Everybody knew that all these preparations contained either arsenic or strychnine, and they were told now in one part of the Act that preparations of strychnine and arsenic were not to be sold without registration, yet in another part they were told to sell these vermin destroyers by merely labelling them "Poison." Again, with regard to putting forward these regulations, it would have been a great mistake, but that it was not altogether their own doing. However, he had in his hand a sort of manifesto which was put forward by the Council some twelve years ago when a Poison Bill was before the House of Parliament, and it did so distinctly argue against the adoption of some such regulations as were now proposed, that he could not help reading it. It was called a short and clear statement of the grounds of objection to the several clauses of the Poison Bill before Parliament. This was in 1858. The first reason given was this: "The Bill is founded on erroneous principles, containing as it does many intricate, frivolous, and impracticable regulations with regard to the details of the management of a chemist's business, resulting from ignorance as to the nature of the business and the requirements of the public." He did not think any description which any one could apply to these regulations could be better than that. Then it said: "The 4th and 5th sections relating to the entry of every sale of a poison would, in fact, facilitate the sale of poisons, by throwing on the Legislature the responsibility now resting on each individual chemist, who would have much more difficulty than he now has, in refusing to sell poisons if they were applied for according to the terms and conditions of an Act of Parliament." The fact was, that the public could now get poisons with much greater ease than they could before. If he sold a person a pennyworth or half an ounce of laudanum, he always asked a great many questions as to what it was wanted for, and how it was to be used, because in case of an accident, the responsibility was with him, and if a person poisoned their child, a coroner and a jury had no words hard enough to apply to the chemist for selling the poison. But now they were constantly selling it in accordance with the provisions of the law. Formerly he should hardly have sold arsenic or many other preparations to any one, but now if a person came and asked for an ounce of arsenic, or cyanide of potassium, or strychnine, or prussic acid, all he had to do was to get the name and enter it in the registry, see that the person signed for it, and the responsibility was off his shoulders altogether. With regard to the proposed regulations of this same Poison Bill, they were very similar to the ones now issued by the Council. The 16th section referring to the sale of poisons was as follows:—"Every person who keeps for sale by retail any poison, and every apothecary, surgeon-apothecary, or other member of the medical profession, or pharmaceutical chemist, and every officer of any hospital, infirmary, or dispensary, who has under his custody any poison, shall keep all such poisons together, and separated from all other drugs and medicines, and distinctly labelled with their names; and all jars and bottles in which any such poisons are kept by any such person, shall be distinguished in colour from the jars and bottles in which any other drugs or medicines are kept by him." But what was the opinion of the Council at that time? They said, "The 16th section ordering the poisons in the schedule to be kept separate from other poisons, would interfere with the judicious and proper arrangement of a chemist's establishment, and increase instead of diminishing the danger. The adoption of coloured bottles, as proposed, would, in the opinion of every practical pharmaceutist, greatly increase the danger." And this was, he believed, the general opinion. If you made a special closet for putting poisons in, was there not as much danger of taking strychnia instead of morphia, or any other virulent poison, for a less powerful one, as at present? The plan he adopted was to keep these dangerous articles as far as possible from any that were harmless, and he did not think any one could adopt a better plan than that, though, of course, each person had his own opinion. If you put in a closet morphia, and strychnia, and prussic acid, and a solution of strychnia, and a solution of morphia, amongst others which were in poison bottles, you would be just as likely, when going to the poison closet, to take one as the other, because all these regulations were merely mechanical aids, and when a man is going to make a mistake, no matter what mechanical aid was given him, he would make it. They had been told that education was to be the grand remedy, and that when chemists were properly educated they would never fail to read their labels, and they would have such a sense of responsibility that they would always make certain that they had what they wanted, and that if they went for rhubarb or jalap they would take care not to get cinchona or cubebs. But all these new regulations would tend to make a man forget to read the labels. He did not say that proper precautions ought not to be taken, for they ought to adopt all precaution possible, but they did not want to be made into mere machines. A man who had a proper sense of responsibility when he was dispensing a medicine, would be independent of all these angular, corrugated, fluted, and sand-paper covered bottles; and, at any rate, his fingers would be quite as liable to betray him as his eyes. At the time he referred to, in 1858, the Council sent a petition to Parliament, containing this, amongst other statements, "That the regulations in the fourth and fifth sections of the Sale of Poisons Bill now before your Honourable House, would inflict serious inconvenience and annoyance on your petitioners and the public, and, instead of affording security against crime and accident, would tend to increase the danger; first, by giving a legal sanction to the sale of certain poisons now scarcely, if at all, accessible to the public; secondly, by inducing purchasers to obtain larger supplies of poison than they require for present use, to save themselves the frequent repetition of the annoyance." A great change seemed to have come over the spirit of the Council, or some of its members, since that time. They certainly had got examinations, and he hoped that by-and-by they would have education too, and then they would not require all these poison clauses and fancy bottles. However, amongst the reasons put forward at that time for the non-adoption of that Poison Bill, was this,—Pharmaceutical Chemists, as well as medical men, should be exempted from the necessity of adding the word "Poison" to the labels on their shop bottles. Of course, any one would put "poison" on strychnia, morphia, or prussic acid, but was there any safety in putting "poison" on tincture of cantharides or belladonna? They would not put "poison" on tincture of hyoscyamus, because that was not in the schedule, but it might be enlarged at any time. There was a list of about one hundred articles there now, and he did not see why they should not all be printed alike. Perhaps one of the worst parts of the regulations was the last, which stated that in dispensing and selling poisons, all liniments, embrocations, and lotions containing them, should be sent out in distinctive bottles. The meaning of dispensing was compounding, taking out, and mixing anything that anybody came and asked for. It was all very well to take great care when dispensing a prescription, and to put it into distinctive bottles, but he believed a great many of his friends and brethren in the country were very much more accustomed to supplying a pennyworth of laudanum, a pennyworth of opodeldoc, a pennyworth of oil, and a pennyworth of hartshorn, and mixing them together, than to making up prescriptions for liniments; and it would be impossible to give to persons who came for these paltry amounts, particular shaped or distinctive bottles, corrugated, fluted, or sand-papered. He would, therefore, conclude by moving:

> "That this Meeting, whilst fully recognizing the duty of every Pharmaceutical Chemist, and Chemist and Druggist, to take all due precautions for guarding against mistakes and accidents, and securing the safety of the public when dealing with poisons or dangerous articles, does not consider the enforced adoption of the proposed Regulations for keeping and dispensing poisons to be either necessary or desirable."

Mr. Vizer said he had great pleasure in seconding the amendment. He was somewhat surprised in taking up the Journal for the present month, to find the subject was to form so material a part of the discussion, for from the very general expression of feeling with respect to these proposals, he was almost in hope that the Council would have shelved the question altogether, seeing its impracticability. He now saw that this was an error of judgment on his part, inasmuch as it was compulsory on them to bring this matter forward, being bound down by Act of Parliament to provide some restrictions; but in looking through the pages of the Journal as he came along, he found that several Associations had sent in protests against this proposal, amongst others, Bradford, Leeds, Oxford, Scarborough, Manchester, Hull, Sheffield, Nottingham, etc. All these influential bodies and representatives of the trade had, after a deliberate consideration, he presumed, sent up these protests, and therefore, under these circumstances, he apprehended there must be a sound foundation for the rejection of any such rules and restrictions as were now proposed. He did not think that chemists required an Act of Parliament to make them feel their responsibility, for whenever he took up a bottle of strychnine, he was perfectly conscious that he virtually held in his hand the life of his customer. Only the other day he was in conversation with a neighbour who said to him, whenever I take down a bottle I feel that I have a life in my hand. Such was the feeling of any man who had any feeling in him. If he took down a bottle of soap liniment or of tincture of opium, it was the same thing, he must look at the label, and if he did not read the label, he was not fit to take a bottle in his hands. The sense of their moral responsibility was perfectly sufficient to make them use every possible precaution, and he was satisfied there was not a chemist in the room but took such precautions as he considered necessary. Every one had his own peculiar means of providing against accident, and every man had a right, and he thought was justified and far more likely to carry out the spirit of what was desired by using his own judgment, than by being bound and tied hands and feet, and having to pay servile obedience to an Act of Parliament. Again, turning to the January number of the Journal, he found it stated that when the Pharmacy Bill was under discussion in the House of Commons, there were advocates for greater stringency, who said it would be useless to leave the power of declaring what were new poisons to the Council of the Pharmaceutical Society, for to save themselves trouble they would keep the schedule as small as possible. But further on, he found that precisely the opposite assertion was made, viz., that in order to ensure a monopoly for the chemists, the Council would be continually adding to the list; and in another place it was stated that those who had charge of this Bill on the part of the chemists would sacrifice the safety of the public to the convenience of the trade. On the contrary, he took it that in these proposals which were now before the meeting, the convenience of the trade was being sacrificed, though not to the safety of the public; for he believed that when they trusted to these regulations, as a gentleman had said just now, and had poisons in a particular cupboard, or on a particular shelf, there would be no more safety than at the present time. He had a bottle of tincture of belladonna and the same of aconite, and he put these in one particular place, but he did not put the liniment of aconite or belladonna next to it. By no means; that was kept in another part of the shop, so that he could not help knowing that if he went for the liniment, he could not take the tincture; but if these things were put in the same cupboard, and on the same shelf, what was to prevent him taking up the liniment instead of the tincture? Again, turning to the Journal, he found it stated,—"We know the difficulty of prescribing a fixed rule to be observed by all chemists in storing poisons. Over and over again we have declared in this Journal that such a thing would be impracticable, that one unbending rule applied without regard to ever-varying circumstances, must very often break down. Nevertheless, it is perfectly well known that in almost every pharmacy of any repute, precautions are adopted to lessen the chance of error and accident. These precautions, founded on the requirements of each establishment, are carried out without inconvenience, and with so much apparent ease and advantage that a disregard of them would be a positive nuisance to the parties concerned." Most heartily did he concur with the sentiments of that paragraph, which he thought must commend themselves to every one of common sense; but the next sentence he could not understand. "Therefore taking the various systems as alternative rules to be observed by all can be no hardship to any." He could not understand the logic of that. It might be his denseness, but he could not understand the argument, that because every chemist used his own common sense in taking precautions against poisons, that therefore it was equally easy for them to be tied down to its three definite rules, because the three were in reality one; you might use either one, but you must use one. Again, he thought that the Council was now anxious to prove the fallacy of the argument used by those gentlemen who said when the Pharmacy Act was brought into use, that chemists would keep their schedule as small as possible. He was afraid, on the other hand, they wanted to prove that the Council was not asleep, but wanted to make the schedule as broad, as large, and as extensive as possible. That seemed to him the tendency at present, for only three or four months back there was a considerable addition to the schedule, and nobody knew but that next month they might have a long string more. He, for one, most heartily protested against the Council having the power of adding in this way without consulting the trade at large. One further quotation he wished to make from the present Journal, where there was an assertion made,—"Has not the Pharmaceutical Society received privileges under the Act of 1868? and are not these privileges accompanied by duties? We do not anticipate that our Society will be walking into every chemist's shop to overhaul his bottles, but we do feel that, in cases of accident, the observance or non-observance of the rules laid down by the Society will go very far with judges and juries." Now, with respect to the first part of that paragraph, knowing the kindness of heart which always influenced Mr. Bremridge, and the politeness which he always showed to all members of the Society, he could not look upon him as regarding with any degree of pleasure the fact of going into a Court of law, and with his paper in his hand, before the summing up of the case, presenting this Act of Parliament, and saying, "Here is the Act we passed, these are the restrictions we bound down our members to obey, and if he has not obeyed them, convict him, and impose upon him the heaviest fine possible." He apprehended that was really the gist of the matter. This law would be in reality a law passed for the purpose of increasing the penalty in the case of any poor brother who happened to meet with an unfortunate accident. Taking all these things together, he maintained that if they endeavoured to restrict themselves to the Act of Parliament, they would find enough difficulty. He was perfectly willing for the Council of the Society to give them the benefit of any suggestions, and he, for one, would be most willing to receive them, and so, he believed, would all members of the trade; but he would entreat the Council to avoid, as far as possible, binding down their suggestions by an Act of Parliament.

Mr. Collins said it appeared that the Council were under the impression that they were bound to submit these regulations. Whether they were right or wrong in this view he did not pretend to say, but he certainly much objected to the mode in which they were presented, as admitting the principle, on the part of the Council, representing the trade at large, that it was at all necessary to prescribe these minute rules to educated and competent men. It was quite right that all should pay the penalty of their misdeeds, and if any one, by carelessly conducting his business, inflicted an injury upon another, let him be brought before the courts and punished; but he saw no reason for imposing a heavy obligation upon the whole trade by passing these useless restrictions, which, as every one knew, would not really tend to increased safety. All these ideas of sand-papers, corrugated and fluted bottles, and other appliances to enable a man to do without the senses which God had given him,—one of the noblest of which was eyesight,—were really to be regretted. Everything ought to be properly labelled, and those who neglected to do so might fairly be punished; but it was absurd to try and relieve either chemists or their customers from the necessity of using their eyesight.

Mr. **Watts** thought they were travelling a little out of the record. Every speaker hitherto seemed to have lost sight of the fact that what they had to consider was, what the public required at their hands. It would be in the recollection of many that, some short time ago, a considerable amount of excitement prevailed on the subject of poisoning, accidental and otherwise; and, in consequence of the introduction of the Amended Pharmacy Bill, the Privy Council, on the part of the public, consented to accept a Poison Bill far less stringent than was originally intended. It was, therefore, the public whom they had to satisfy, not themselves. Every one knew, as had been said more than once, that when they took down a bottle of strychnine, they held life and death within their power; but the public required some legislative safeguards for their own satisfaction. He therefore thought it would be much better for them to take the matter into their own hands rather than be compelled to do so, which they certainly would if they refused.

Mr. **Edwards** said he had always been one of those who looked with a great deal of jealousy upon any restriction proposed to be introduced into the business either of a chemist or any one else. At the same time, he confessed he thought that, to some extent, necessity was laid upon them; and, after giving the best possible consideration to these recommendations, he must say he did not think there was anything in them to preclude their universal adoption. It might be very unpopular to say so, but he did say it; and he must also add, without intending any disrespect to those who had spoken on the subject, that if what he had heard against them was all that could be urged, he thought the very best thing they could do would be to adopt them without delay. If this were brought before a court of justice, was there anything which had been brought forward which would tell for one moment with a jury? One gentleman said he had a great objection to these things because he always practised them. Another did not like putting things in a cupboard, because he had always been accustomed to push them by in a corner. He should certainly recommend these suggestions for adoption, and yet, at the same time, he was well aware that any law, to be operative, must have the general assent of those upon whom it was to act. He would, therefore, strongly recommend that these measures be fairly tried for twelve months as the recommendation of the Council, and not have urged against them such flimsy objections as he had mentioned, but only such as were felt to be of weight, and could be gravely sustained. He had not heard any one assert that it was impossible to adopt these regulations, or that they were impracticable. The general statements he had heard were, "We do not like to be trammelled; and if we do this, there will still be opportunities for error." Of course there would; but the object should be to reduce them as much as possible. One thing he had been going to urge, in which he had been anticipated by Mr. Watts: they did not look at this matter from the right standpoint, for the question was, what the public required. A Pharmacy Bill had been conceded to them on the condition that they would do what they could for the benefit of the public. He had been on the Council long enough to know the history of every Poison Bill, and he knew what trouble had been necessary in order to oppose them and ensure their rejection. The public was, on more than one occasion, worked up to fever heat, and what they wanted was a Poison Bill; they did not care about chemists and druggists, or anybody else, but they wanted a stringent measure to regulate the sale of poisons. They said, "We do not care about these men, but whilst poisons have hitherto been sold without let or hindrance by anybody, they shall be sold so no more." Bill after Bill was introduced, but to them all they objected on principle, saying, "Education is the one great and only safeguard. Every man knows best how to conduct his own business, and there are many conditions in these Bills which are impracticable." One Bill after another was altered, but they were not satisfactory; and at last the Government got impatient, and said, "These men will never be satisfied; we will pass such a Poison Bill as we think fit." Some of the schedules of poisons would have thrown into shadow what was now objected to, and it was only because of the overthrow of Lord Derby's Government that the last Poison Bill was not carried. When it was reintroduced, the Society offered to frame a Bill which would be more satisfactory both to themselves and the public, and the Government at last did them the honour to allow them to do so; and in this step, he believed, the Government did a thing which was altogether unparalleled. There was no instance of the kind, of a voluntary Society, without aid from any extraneous source, being made the hand to execute a great Government measure. They had made them, to a certain extent, Government officers, and given them the control over the whole of the trade; but all this had been done on the faith that the Society would fulfil their wishes in regard to the sale of poisons. The great question was, not what did they like, or what did they feel to be a hardship, but what did the public require; and were they ready to carry out faithfully and honourably what they had promised to do when these great powers were committed to them. While they exercised these powers for their own advantage and comfort, were they not also willing to take a larger view of the matter, and exercise them for the good of the public? He would beg leave to ask any gentleman to try and put himself outside the limits of the trade, and imagine he was not a chemist, and ask himself what would be his feelings if a neighbour or friend, a relative or a child of his own, were poisoned with some oxalic acid sold for salts, or something of that kind? What would he say as he stood and looked at the cold remains of his child? "Has everything been done that would have prevented this accident? Was every precaution taken to stay the hand of death, and keep the silent seal of the destroyer from those cold lips? Am I satisfied that these dangerous things, on which the life of my child has been hanging, have been guarded and sealed, and kept with every possible precaution against accident? Are there no regulations that can affect these things, and make these accidents less likely to happen? No, there is no regulation. They say they know their own business best, and they would not have any regulations. But they did not know their own business best; they have not known their own business best; and for the last ten years the feeling has been rising that they do not, or these accidents would not happen. It is quite true that some honourable and careful men may, but I want a regulation that will apply, not only to the careful and painstaking man, but to every one; not liberty for some men to do so-and-so, but a law which shall bind every man. I want it to apply, not only to the chemist at the West End, but to the careless druggist who keeps the chandler's shop at the corner of a poor street,—to every man who sells poisons, compelling him to take all those precautions that can justly be required before a human life is sacrificed. But regulations were proposed; a string of them were drawn up, but they were objected to, and refused. One man said that he did not like putting his poisons in a cupboard; and another said that it was a little trouble to put them in a corner; and another that he did not approve of coloured labels; and there were some other objections of that sort, but it all resolved itself into this, that it was rather more trouble than they chose to take. I can only say this, when these effects come before me, if that is the principle on which these men make laws; if they mind a little trouble; if they think a great deal of an unnecessary precaution; if they are so careless that a little fidgetiness even is sufficient ground for rejection,—it is high time that other people made laws for them." He would not detain the meeting any longer, but would strongly advise that these regulations be adopted for twelve months on the recommendation of the Council, and then, after they had been fairly tested, let them be accepted or rejected. He would only add one word more, viz. to express his conviction that if a law were passed, that every one who adopted these rules should be exempted from income tax, there would not be many dissentients.

Mr. **Pedler** desired to support every word which had been so well said by Mr. Edwards, and he did so not as a member of the Council, but as an independent member of the Society. He believed every one in the trade already adopted them more or less, but they fancied it would be an intolerable burden if it were made compulsory. Some gentlemen seemed to suppose that if these precautions were adopted, they must at once become careless, but what ground was there for such a supposition? It was not one sense alone which was to be trusted. If all the poisons were kept in a cupboard, surely more care would be exercised when going to the poison cupboard than when taking a bottle from an ordinary shelf. But another and a stronger reason for their adoption was this,—that an Act had been passed by Lord Campbell which made every man in the room responsible to the full extent of his means for any damage which he occasioned. Would it not be a plea in a court of law that all possible precautions had been taken for the safety of the public? Would it not be a powerful lever in the hand of an adverse counsel in bringing upon them, through the verdict of a jury, a heavy amount of punishment, if he were able to say that they were not willing to put up with a certain amount of inconvenience in order to ensure freedom from accident? For their own sakes, therefore, and especially in the interests of the younger members who had not had so much experience, he thought it well that a system should be adopted which would remind them when they saw the poison cupboard, that it required greater care, and not less as had been stated, when handling these dangerous things, than when using ordinary bottles. For that reason alone, and as a matter of precaution with regard to future damages, if placed in the position in which one of their brethren in Liverpool had not long ago had the misfortune to be placed, he would recommend these rules for adoption. If they agreed to a certain state of very carefully-drawn up rules to prevent accident, would it not tell upon every jury and upon every judge in the land if such a plea as that were put upon the record? It was worth any amount of inconvenience to themselves if they were able to say on the first occasion of their meeting, after being fused into one whole body, they had shown every desire to do what they could to merit the good opinion of the public, who after all were the ultimate judges. If it could be pointed out that a motion of this kind had been brought before the meeting and rejected, what would be said? Simply that they were going on in their own old-fashioned ways, and any cantankerous member of the House of Commons would be justified in inserting a clause in any other Bill, and bringing down upon them an amount of inconvenience and annoyance far beyond anything now proposed.

Mr. SUTTON (Norwich) said he wanted to know whether medical men and apothecaries were to submit to these regulations as well as themselves; and if not, what a state of confusion there would be! there being often in the same house medicines from doctors and chemists or druggists. He was quite willing to admit the feasibility of keeping concentrated poisons by themselves, but to keeping these articles in certain shaped bottles, and with certain coloured labels, he considered a disgrace and a reflection upon the whole body, which they ought not to put up with. Each man was held responsible for what he did, and if these regulations were carried out to the fullest point, they would have no indemnity in case of accident. Let each man manage his own affairs as he chose, and no doubt proper regulations would be enforced, which would be sufficient for the purpose. The only true principle was that of education, and all the mechanical regulations in the world would not prevent a careless man from making a mistake.

Mr. WILKINSON desired to ask whether it was imperative that something of this kind should be done, because, although he was as strongly opposed to these regulations as any one who had spoken, and could say very much more probably against them than had been said, though he would not detain the meeting by so doing, still, if it were necessary and compulsory upon the Society to do something, it might be worth while to take the matter into consideration. Very few, he thought, would object to the first of these recommendations, because almost every well-regulated establishment carried it out at present. No one would think of keeping a virulent poison without a label, but he strongly objected to No. 2 and No. 3. He bought arsenic by the cask, and he should not like to have to put it in a cupboard with an ounce or two of strychnine or morphia. With regard to the dispensing and selling poisons in the shape of liniments and lotions, he had always been in the habit of labelling laudanum and things of that kind—"Poison," because the Council had recommended them to do so. He hoped before he went any farther the Chairman would answer the question which he had put to him, because it would greatly help them in arriving at a decision.

Mr. **Fitch** said he had no objection, individually, to the regulations, but it would be very inconvenient if every preparation of opium, such as paregoric and morphia lozenges, and articles of that kind, were obliged to be kept in a particular cupboard. He did not think the rule should be carried out strictly with regard to what might be called the simple preparations. When the Bill first passed, he desired as a member of the Society to carry it out in all its integrity, but he found that not only were articles described as poisons sold, but that registered chemists bought almost all their medicated lozenges from one firm, the members of which were not registered chemists. He had referred to selling a certain article; because an apprentice came for it, and it contained strychnine; but, upon writing to the Council, he found it inserted in another list, and was informed he might sell it by putting the word "Poison" on it. To show the difficulty which sometimes occurred, he might mention that a lady came to his shop one day for some tincture of cantharides, and, being in a hurry, he refused to sell it, unless she signed her name, which she refused to do. But he found afterwards that this particular article might have been sold. Not having time to refer to the Act, he went by his common sense, which told him that it was as much a poison as many other articles included in the schedule. However, he saw no objection to agreeing to the views of the Council on this matter.

Mr. **Sandford** said he had been so much mixed up with legislation on pharmacy matters that the meeting would no doubt bear with him while he said a word or two with regard to these regulations. He felt there was a responsibility thrown on the Society, which it had never had before. Allusion had been made to the action which had been taken when former Poison Bills were before the House of Commons. He had in his possession every Poison Bill which had ever been printed, and had been on the Council long enough to take part in the opposition to every such Bill ever presented. He knew very well when those remarks were written which one gentleman had read, and the circumstances under which they were written. It was on the ground that the Poison Bills of that date said nothing whatever about the qualifications of persons who handled poisons. He could tell them that Mr. Bell, who always opposed those Poison Bills, had himself proposed a Bill which would have enforced restrictions; but it was upon condition that all who dealt in poisons should be examined and registered men. Mr. Bell was quite right in advocating these restrictions, if they took education as the foundation of safety, for there could be no other proper foundation. When Mr. Vizer said that an educated man in taking a bottle of strychnine into his hand, knew that he held the life of his customer in his grasp, he surely did not object to the man being reminded that he had strychnine in his hand. It was not that all bottles of poison should be of the same shape, or that they should be all in one particular cupboard or compartment or apartment, or place set apart for dangerous articles. Strychnine might be kept here in a cupboard, morphia there tied over, and prussic acid somewhere else, in an angular bottle. Each one might do that which was convenient; and each gentleman who had a cwt. or a ton of arsenic might paint the cask in two or three colours to make it distinctive at once. But he knew very well that arsenic casks had very often been left exactly like other casks. Only that morning he had heard a gentleman say that he remembered when required to make yellow arsenic, that he went amongst a row of tubs and found an arsenic cask standing by an arrowroot cask, on the top of which he blended his yellow ochre and arsenic. If things were to be kept in that careless manner, he could not deny the necessity there was for some restriction. He did not hear that any of these things were impracticable. On the contrary, they had all been carried out to a certain extent. But they did not like, as they said, to be tied hand and foot. One gentleman had shown him recently an indiarubber cap, which could be applied to the stopper of a bottle, which would be perfectly distinctive, and would always remain affixed to the stopper, so that it could not be kicked about the shop; and he should like to ask Mr. Dickinson what he would say to his assistants if he found them kicking the stoppers of bottles about; probably he would discharge them. As to the dispensing poisonous preparations, such as liniments or lotions in distinctive bottles, he thought a very good illustration of the necessity for so doing was given by the instance which had been mentioned, where a lotion had been taken by mistake, because it was not put into a distinctive bottle.

Mr. **Urwick** said that showed the effect of educating people, to fancy that every lotion must be put in a lotion bottle.

Mr. **Sandford** said they had been trying to educate the public for some time in this way, and it showed that the public were beginning to appreciate it. The responsibility of making some such regulations as these rested on the Society in a very serious way. He had been in communication with the Privy Council office respecting these regulations for the last twelve months, and when one gentleman spoke of being called upon suddenly to adopt them, he must have forgotten that they were all published three months ago in the January number of the Journal, when it was also announced that they would be submitted to the annual meeting. They had received certain privileges under the Pharmacy Act, so far that no one could now carry on the business of a chemist and druggist who was not registered by the Society, and as they had privileges under this Act, so they had duties to perform; and one of the first of these was to adopt some such regulations as were now proposed, and which had been declared to be good in themselves. [Several members expressed dissent from this.] He had not heard any serious objection taken to any one. But if one was objectionable, there were the other two to fall back upon. No doubt it was unpleasant to be bound to do your duty; but it must be remembered that there were many chemists who had not that high sense of duty and responsibility, and who were not such educated men as those whom he saw before him. He, therefore, considered that such regulations ought to be passed, and that they should be compulsory alternatively in every shop where the business was carried on. If they did not do that, they would not be in a position to go to the Government and say they had kept faith with them. The Government were treating the Society with great confidence and liberality, and it had therefore a duty towards the Government to perform. In fact, their duty to the Government was to protect the public, and unless they made some such regulations as these, the duty would not be performed.

Mr. **Manby** (Southampton) maintained that there was not a chemist in the room who would not and did not do all he possibly could to carry out the Poison Bill to all intents and purposes. But he was perfectly persuaded that it could not be carried out in wholesale warehouses or cellars where large stocks of oxalic acid, and other articles of that description were kept.

Mr. **Sandford** said he had forgotten to mention, in reference to what had been said about keeping morphia and paregoric lozenges, that he had never yet labelled paregoric as poison, and he felt that he was perfectly justified. He should never put paregoric into the poison cupboard, or treat it in any way as a poison.

Mr. **Waugh**, amid much laughter, said he was surprised to hear their late President, after telling them the duty they owed to the Government, state plainly that he deliberately violated the Act; but he supposed he did so because his common sense told him that he could not label these things "poison," unless he put it "Poison by Act of Parliament."

Mr. **Reynolds**, of Leeds, said he believed the object of bringing this matter forward was to ascertain what was the general feeling of the members of the Society; but there might be other means, besides the voices of those present, for ascertaining that. It was a very remarkable thing that the Journal recorded six memorials presented from six leading towns, every one protesting against these regulations, and representing fourteen meetings held specially for the purpose. With regard to his own town, the subject had been fully discussed and carefully canvassed, copies of the regulations having been printed and circulated; and also the objections which had been raised to them. The matter had been thoroughly gone into, *pro* and *con.*, and the result was a memorial, with 106 signatures against the adoption of these rules, there being only one refusal to sign it. He might, therefore, say that the chemists of Leeds were unanimous in deprecating such a course of action. They had had four months to consider, and certainly what Mr. Edwards had said had rather convinced him that the case which the Council had to present was worse than he thought it before. He had heard a great many vague threats about the Privy Council, but they only put him in mind of the way in which some people talked to children about a black man, who would carry them off if they did not behave themselves. A challenge had been thrown out to state what would be done if they did not comply with the recommendations of the Council, and no answer had been returned. He did not believe the Council really wished to act out of harmony with its constituents, but as it was evident a want of harmony existed at present, the question was, whose will was to operate? Inasmuch as the Council only derived its authority from its constituents, he hoped it would see the wisdom of accepting the decision given by the members at large. They had recognized this principle by bringing the matter before the meeting, and he thought they had now had a sufficient statement of opinion, not only from those present, but those who were unable to attend. At any rate, he trusted the conclusion which the meeting came to would be so decisive that the Council would have but few regrets in falling in with the general feeling.

Mr. **Bland** rose to call attention to one or two points which seemed to have escaped attention. In the first place, he begged to express his conviction that very few gentlemen present, certainly none who had spoken, had called attention to the fact, that the proposed restrictions would be far more expensive and vexatious than most persons had any idea of. They were not confined to those things which were called poisons in the Act of Parliament; and one difficulty which had always been felt was, how was the word to be defined? These regulations were far more stringent than the Act; for they extended not only to poisons, but to dangerous articles. He wanted a definition. But if these regulations were to be legally enforced, the only way in which he could act with safety would be to put his water-bottle on a separate and distinct shrine in his shop, and call the rest of his premises dangerous. Did any gentleman on the Council, or off it, mean to say that if a certain number of articles, defined as poisons in the Act of Parliament, were placed in a closet by themselves, that an ignorant or unskilful person might be turned loose in the shop to do anything he pleased with the bottles left behind? The only real security to the public against accidental poisoning arising out of storage or dispensing of dangerous articles lay in the educated professional care of the Pharmaceutical Chemist, and the exercise, on his part, of constant, intelligent watchfulness. All mere mechanical regulations like these might then be dispensed with. With regard to sending out liniments, embrocations, and so on, in distinctive bottles, in nine cases out of ten, and certainly in the very great majority of cases, the customers brought their own bottles; and they would not go to the expense of changing them when they saw no necessity for it. Again, if they sent out twopennyworth, as one gentleman had said, of soap-liniment and laudanum in an angular bottle, what would become of that bottle? The liniment would be used, and the bottle would be put into a cupboard with a number of others, and perhaps on the next occasion, when the customer visited the same establishment, he would bring the same bottle for a penn'orth of hair oil. Were they to say, We will not serve you with hair oil in that bottle, because it is a poison-bottle? This part of the regulation, therefore, would be perfectly impracticable, like the 17th clause of the Pharmacy Act, which was violated every day.

Mr. **Carteighe** said there had been a great many questions raised about the constituency, and one gentleman, whose opinion was generally well worthy of consideration, had spoken of six petitions which had been sent up against these regulations. But what had other towns done? If there had been six petitions against it, he certainly would not say that all the others were in favour of it, and did not pretend to say; in fact, many had not considered the matter, very likely. But how were these petitions got up? The fact was, that the most active men in certain towns happened to be opposed to these things; and they got the Society together, and put their views before them, bringing forward a number of objections in detail, which really, if considered, would not hold water. He was not going to discuss the question in detail at that late hour; and they all agreed that in detail most of these things were good, and were practically carried out. The grand objection was, and he certainly could not but sympathize with it to a certain extent, that they did not like to be fettered or trammelled as they said. They did not object to them because they were bad, for they admitted them to be good, and, therefore, he asked them not to raise a false issue, but to state plainly what was the real objection,—that they did not like to be trammelled by any Act of Parliament, if they could help it; still less by any regulations coming from a body selected by themselves to conduct their own affairs. Still it must be remembered that the Pharmacy Bill was accepted through a Poison Bill. For years they had been trying to get something in the shape of a recognized status. They had tried all sorts of means to get a distinct qualification under an Act, but could not do so, and never would have got it except through the agency of a Poison Bill. The public cared nothing about the educational status of chemists, but simply wanted protection in the matter of poison. There was a grand fight between the Society, as represented by the Council, on the one side, and the Government, as representing the public, on the other; and the Pharmacy Bill was a compromise. They did not come, therefore, as a Council and ask the meeting to sanction certain things which they thought would be good for leading West End houses, but they came in fulfilment of what they considered an actual bond to which they had pledged themselves. He objected, as much as possible, to every regulation about poisons being put in the Bill; and he might go further, and say he objected to every clause which contained these regulations, and would have done all he could to keep them out altogether. But he found that, in that way, they would not get the Pharmacy Act passed at all. In proposing these regulations, therefore, they had brought forward what some gentlemen seemed to consider a very formidable list. But it was, in fact, simple to a degree. It gave as much latitude as possible to the members; whereas in every Poison Bill which had been brought forward, there were long lists of restrictions much more annoying than anything now proposed. All these things were admitted to be good, if a certain amount of trouble were taken. The whole question was narrowed to this. The trade said they declined to be trammelled with any regulations at all. But, on the other hand, the Council said, "We are bound to submit certain regulations to you." The question was, were they powerful enough as a body to keep out any regulations of the sort which might be brought forward in any other Act of Parliament, if public excitement were aroused by a series of the Palmer poison cases. If they could be quite sure of that, then they might be right in refusing to adopt these rules; but he very much doubted it. They would certainly be told by the Government of the day, "You had a fair opportunity of considering this question, but you did not even propose an adjournment to analyse the thing, and see how it worked;" and in that way they would put themselves, he thought, in a very unfortunate relation to the public. He, therefore, recommended them to adopt these mild alternative regulations, rather than run the risk of having some much more stringent ones imposed upon them.

Mr. Squire said he had endeavoured through life to keep as much as possible to one principle. He had always been of opinion that precautions with regard to the shape of bottles were not so safe as labels. He remembered quite well when Mr. Bell and himself were examined before the Committee of the House of Lords, one gentleman brought down in his pocket one day a three-cornered bottle, and asked if that would not do very well for a poison bottle. "Oh," said Mr. Bell, "Crosse and Blackwell have patented that for pickles; we should have to pay them for a license." Mr. Bell was then asked why he did not do such-and-such things? and his reply was, "I would never put up a fence unless it could be a secure one, because people would lean against it, and fall into the water." Before they adopted these recommendations, therefore, they ought to be thoroughly satisfied that they would be a secure defence to the public; and if they were, no doubt they would be readily adopted. It might, perhaps, be well, after the subject had been so well ventilated, that the question should be adjourned, in order to see if any other regulations would be accepted by the Government as a security to the public; and he certainly thought some of the provisions were not as perfect as they might be. Perhaps, on further consideration, they might be improved, and rendered less annoying to the trade, whilst giving equal or even greater safety to the public.

Mr. Nicholson said there was a very animated debate in the House of Lords on the passing of the Pharmacy Bill when the question of distinctive bottles was brought forward, and unmistakably rejected. To show the difficulty of working the third rule, with regard to liniments and lotions, he might mention that he had very recently seen a poison bottle from a Regent Street house filled with sal volatile.

Mr. Hucklebridge thought the Society would incur a very heavy responsibility if they rejected these regulations without being prepared to put anything in their place.

They had been told, over and over again, that Government expected this of them; and though there were certain things which might be objected to, as obviously Rule 1, yet the regulations as a whole were good, and could not be thrown overboard with safety. He would recommend that the subject be taken into consideration by the incoming Council, and that a further report be made at an adjourned meeting. He would propose as an amendment,

> "That the consideration of the question be referred to the in-coming Council, who shall report to a future special meeting."

Mr. **Brown** said Mr. Sutton's question had not been answered,—whether these regulations were intended to apply to apothecaries and medical men in dispensing medicines? if they were not, and he could not suppose for a moment that the Council would dare to propose their application to that large and influential body,—was it right that they should be asked to impose upon themselves a yoke which, he was sure, would be found extremely burdensome, and which was not borne by the body of gentlemen in whose hands lay the greater part of the dispensing in the United Kingdom? He certainly thought Mr. Sandford rather unfortunate in his illustration of the effect of putting lotions into distinctive bottles, for if the nurse had been educated to the proper point she would have used her eyesight and read the label, instead of trusting to the general appearance of the bottle. It seemed to him an argument to show the fallacy of such restrictions, and that no safety could be expected from them. He thought they had all gone too much into *minutiæ*, and on the general principle he was decidedly opposed to substituting slavery for the enfranchisement which they had been led to look for.

The **Chairman** said he had two questions to answer before putting the question. With regard to the application of these regulations to apothecaries and medical men, he could only say that they had no power to legislate for those gentlemen at all. The second question, as to the necessity of making some regulations on the subject, that obligation arose out of the first clause of the Act, and he would ask their legal adviser, Mr. Flux, to give his opinion upon it.

Mr. **Flux** said he must confess there was, in his opinion, no danger of a *mandamus* being issued calling upon the Society to pass these regulations; but whether the public would not consider that the clause did impose an obligation to pass some regulations, and that, refusing to pass any, the subject was remitted back to the public to be dealt with, as Parliament might in its wisdom think best, was a matter for the consideration of the members. Before reading the clause, he would say that in many cases the Judges had considered the word "may" as equivalent to "shall;" as he had already said, that was not the construction which he should put upon the clause, but still, when it was found that this interpretation was sometimes given, it showed, at any rate, a sense on the part of the Judges that when Parliament used the word "may," it did impose an obligation. He then proceed to read the first clause of the Pharmacy Act, 1868, and also the letter which appeared in the April number of the Pharmaceutical Journal from the Privy Council, with regard to preparations containing poison; which letter of course was based upon the opinion of the Attorney-General and Solicitor-General.

The **Chairman** then put the amendment to the meeting, when the show of hands was in favour of it.

Mr. **Cartwright** demanded that a regular division should be taken, but, after some delay and difficulty in arranging for so doing, he ultimately withdrew his demand.

The **Chairman** said it was now his duty to put the amendment as a substantive motion, but, before doing so, he must put the amendment proposed by Mr. Hucklebridge,—"That the consideration of the question be referred to the in-coming Council, who shall report to a future special meeting.

Mr. **Brown** said that, practically, the amendment which had been carried by the show of hands did all that this second amendment proposed to do. Of course it would be the first duty of the new Council to take into consideration this very important question, and he hoped they would come to a happier conclusion than their predecessors had succeeded in doing. He, therefore, submitted that this amendment would be useless.

Mr. **Abraham** said he would move, as soon as he was in order in so doing, "That the consideration of the subject be adjourned for twelve months." He had, in the Council Chamber, made a motion to the same effect, which had received considerable support, not because he attached so much weight to the objections which had been urged against these regulations as some gentlemen present did, but because he thought it extremely desirable that the subject should be dealt with in such a manner that it would receive the unanimous support of the Society, and which would fulfil the obligations they were under to the Government. He did not think it was possible for any candid person to take the Act of Parliament and read one of the first clauses, without seeing that the Legislature intrusted them, with the sanction of the Privy Council, with the responsible duty of making some provision on the subject; and he must say the objections made by some gentlemen present, were founded entirely, he believed, on misapprehensions. The regulations, in fact, would not involve the difficulties which were alleged; for instance, any gentleman might write upon his cask the word "Poison," however large it might be, and thus he would comply with the Act.

Mr. **Brown** was sorry to interrupt any gentleman, but he certainly objected to travelling over the whole ground that had already been gone over. The proposed amendment was quite needless.

Mr. **Abraham** submitted that he was perfectly in order, as he had given notice of the amendment which he was now proposing,—that the subject should be deferred for twelve months. If the Society would not deal with this question, the Government would do so in some shape or other.

Mr. **Edwards** said it had been assumed by those who advocated the amendment, that to reject legislation at present was to remit it to the Council; but that was not the case.

Mr. **Dickinson** said they had carried the amendment as a specific resolution, and there the matter ended. They did not remit it to the new Council; but they might take it up again *de novo* if they liked. He did not want to remit it to them. Let them take it up as often as they liked, and the members would be ready to meet them upon it.

The **Chairman** then put the amendment, that the subject be taken into consideration by the incoming Council, and that a further report be made to an adjourned meeting. A division took place; and on a show of hands, there appeared 87 for, and 50 against. The Chairman declared the amendment carried.

On proceeding to put the amendment as a substantive motion,

Mr. **Abraham** moved that the consideration of the subject be postponed for twelve months. He thought all would agree that this was a subject which ought to be dealt with at an annual meeting, and not at a special meeting, which might be held at any time during the twelve months, when there might not be nearly so many members present. Adopting his amendment, the Council would not be precluded from considering the matter in the interval, and presenting any proposals which they might think proper to prefer.

Mr. **Rogerson** said he had much pleasure in seconding the amendment.

Mr. **Randall** suggested that they might take the resolution now carried as far as it went, and engraft upon it that one proposed by Mr. Abraham, remitting the subject to the next Council, and requesting them to report to the next annual meeting instead of to a special meeting. He thought that would be a compromise which would meet the views of all parties.

A **Member** asked if that would preclude the Council from enforcing any regulations with the sanction of the Privy Council.

The **Chairman** said the Council had no power to do so. It must be the act of the Society.

Mr. **Deane** thought Mr. Randall's suggestion a very good one.

The **Chairman** then put the resolution in the following form:—

> "That the subject be taken into consideration by the incoming Council, and that a further report be made to the next annual meeting."

This was carried unanimously.

Mr. **Schacht** asked leave to move the resolution which he had previously read, and in so doing said he would not detain the meeting longer than just to remind them of the figures which he had before quoted; that the present educational appliances of the Society enabled them to educate about 95 scholars per annum at most; whereas, as far as he could make out, the number annually requiring education was about 3000. He did not for one moment suppose that the resources of the Society would ever be equal to the proper scientific education of this large number. But when it was remembered that they must get their scientific education somewhere, and that in all probability they would derive it from the various schools which were, with more or less effect, being established throughout the country, and which were maintained mainly by the voluntary efforts of pharmaceutists in their respective localities, it would be seen that this must entail a heavy tax upon the resources of those localities, which already contributed very largely to the London institution. He thought, therefore, that something from the central source was due to those representative centres where so much had been done to supplement the efforts of the Society. He did not expect any immediate action to take place, but he hoped that, this question being considered, it would ultimately lead to something being done. He begged leave to move the resolution which he had previously read.

Mr. DICKINSON begged leave to second it, and he hoped it would be passed by the meeting; that the Council would take it into earnest consideration, and report upon it.

Mr. INCE said he should have been very happy to have seconded the resolution, had not Mr. Dickinson forestalled him; but he should most strongly support it in every possible way.

The CHAIRMAN said the strongest argument in favour of the resolution was to be found in the fact that of the sixty young men who had passed their examination during the three months of 1868, forty-one had received their education entirely in the provinces.

Mr. RANDALL said he hardly liked a resolution of that sweeping character to be passed so suddenly. It was a very serious matter, as they not merely remitted the matter to the Council, but did it in such a way that their decision could only be in one form. There was not time then to go into the arguments to show what diversity of opinion there might be upon it. He would refer to the fact, as appearing in the Report just presented, that the Council seemed rather to lean to the view that they should give up educating altogether. He did not believe that the proper thing in perpetuity would be that they should constitute themselves both an educating and examining body. Young men must prepare themselves for examination, and he had no doubt that means of education would, sooner or later, develope themselves. He thought, therefore, it was too important a matter to be passed in a hurry at the fag-end of a long meeting.

Mr. DICKINSON said if they passed that resolution in the abstract, they passed no opinion beyond recommending it to the consideration of the Council, and thus the whole question was left open. If the Council adopted Mr. Schacht's views, they would say so, and then further action might be taken.

Mr. COLLINS said Mr. Randall had raised a very important point, and it must be patent to all, that the practice of modern times was against the same body undertaking the duties, both of educating and examining. The fact mentioned by the President, that a great number of the men who passed, educated themselves as best they could, showed that there was, at least, some supply equal to the demand. He hoped, therefore, that they would not send this instruction to the Council, for it was a very great subject, and required a deal of earnest consideration.

Mr. REYNOLDS said that as a provincial member he felt the importance of the subject, but he certainly thought the resolution rather committed the meeting, and they should be very careful how a corporate body, in possession of large funds, was committed to a promise or even a recommendation that there should be a deviation in the destination of some of those funds. He should be inclined to recommend something much milder; for instance, "That this meeting recommends the new Council to inquire what facilities exist in the provinces for the technical education of candidates for examination."

Mr. SCHACHT thought the scope of his resolution had not been thoroughly comprehended. It only referred to the resources available for such purposes, and this, he thought, would remove any objection on the score of its being desirable that the Society should not educate at all. He was quite aware that it was a thoroughly open question, whether the examining and educational functions should not ultimately be separated; but in the meantime he simply prayed the Council to take into consideration, whether it was possible to frame a scheme by which those resources which were available for the purpose of education, might not be better distributed than they were at present. No one had yet proposed that the funds voted for the sustentation of the School of Pharmacy should be discontinued, and he, for one, should be very sorry to see such a thing done at present. He only wished that the funds devoted to this purpose should be distributed more generally, rather than concentrated. He was sorry he could not adopt Mr. Reynolds's modification, but it did not seem to meet the exact point which he wished to emphasize.

Mr. Collins said in that case he hoped Mr. Reynolds would move the amendment which he had suggested, and he should be happy to second it.

Mr. Reynolds said he had no objection to move the amendment.

A Member suggested, that if Mr. Schacht could agree upon a resolution, it would be better than dividing the meeting.

Mr. Watts said he had a few remarks to make on the question of co-operative stores, and perhaps this would be a convenient time.

Another Member thought this subject had been disposed of.

Mr. Vizer said he came there to exercise his right, as an elector of the Council, to ask a question, which he supposed every elector had a right to do; and he also apprehended, that on such an occasion their representatives ought to give an account of their stewardship before they were re-elected. He was sorry to have to introduce the subject, because it was a very personal and disagreeable one; but he felt his responsibility as a member of the Society, and he would not shrink from doing his duty. He need not enlarge upon the evils which the co-operative system entailed upon the London trade; but a report was now prevalent, that a member of the Council was very deeply implicated in the supply of these stores with drugs. No doubt it was a disagreeable position to occupy, but he felt that he was perfectly justified in asking if this report were correct. If it were not, he was quite sure the gentleman would forgive him for affording him an opportunity of denying it; and, on the other hand, if he were bound to answer in the affirmative, he did most unhesitatingly assert, that it would be the duty of every gentleman present,—and he wished it could be telegraphed to every member of the Society—to scratch the name of that gentleman off the Council. If it were correct that that gentleman was the medium of supplying those stores with drugs, to the serious detriment of every respectable chemist,—for they sold four ounces of tincture of quinine for 1*s*., and so on,—it would become him to retire altogether from the membership of the Society. He therefore desired to ask the question with every respect, and with every feeling of regret that he was obliged to do so, whether it was true that the firm which the President represented was the medium or one medium for supplying the Civil Service Co-operative Stores with the drugs with which they were at the present moment injuring the business of the members of the Society.

The Chairman said he could, in all good faith, give the most implicit denial to that question. The firm with which he was connected did not supply the Civil Service Co-operative Stores.

Mr. Vizer: Or stores of any kind?

The Chairman said that was a question which it was not for him to answer in that place. That was not the place in which to discuss trade questions. The Pharmaceutical Society was not instituted as a trades union, and he declined to answer the question. At the right time and in the right place he should be quite prepared to answer.

Mr. Urwick said the question had a most important practical bearing. As long as their President, who had partly admitted that his firm was directly or indirectly concerned in supplying these stores, remained on the Council, did it not influence the Solicitor, who had to give an opinion as to the prosecution of the persons who dispensed these medicines?

The **Chairman**: Certainly not.

Mr. **Flux**: It is only right to you, gentlemen, and to myself, to say that no influence whatever has ever been brought to bear which could have any influence upon your solicitor in giving advice.

Mr. **Urwick** said that a member of the Council had no business to place the solicitor or any of the officials in such a position.

Mr. **Flux**: I never have been placed in such a position.

Mr. **Vizer**: The question has been put to the Chairman, whether he is in any way implicated, and as he has put himself forward as a representative of the body of chemists and druggists, I say most unhesitatingly that we have a right to have that question answered. Is he or is he not implicated?

Mr. **Flux**: Will you indulge me one moment more?

Several Members: No, no.

Mr. **Watts** said that as the President declined to answer the question, he should like to be allowed to make a remark. He had brought this question forward two years ago, when their then President, Mr. Sandford, gave it as his opinion that the thing would fall to the ground, and he (Mr. Watts) then remarked that he hoped the prophecy would come true, though he feared it would not. He should just like to say a word as to the way in which these co-operative stores carried on their business.

A **Member**: We know all about that.

Mr. **Watts** said he believed the profit was very small, so small indeed that it was ruinous to the trade, and subversive of every principle on which the business either of chemists and druggists, or any other, could be carried on in London. At the present moment, not only rent, but taxation, and demands on their benevolence for the support of hospitals and asylums of all kinds were constantly increasing. He was sorry to hear from Mr. Flux that they could not prevent these things.

Mr. **Flux**: You have not heard it. That is what I wanted to tell you. I say most unhesitatingly upon this Act of Parliament—

A **Member**: Answer the question.

Mr. **Abraham** said he was persuaded the meeting did not know the point upon which Mr. Flux was about to give his opinion.

A **Member**: We do not want it.

Mr. **Collins**: Yes, we do.

Mr. **Sandford**: When this Society was first established—

Mr. **Dickinson**: We want the question answered.

The **Chairman**: It will be my disagreeable duty to leave the chair if this discussion is continued.

[The Chairman then left the chair, which was taken by the Vice-President, Mr. **Haselden**.]

Mr. **Sandford** said it was quite competent for anybody to vote as he pleased, but it was no part of the business of this Society to ask a member whether he supplied one man or another.

Mr. **Carteighe** said he supposed Mr. Vizer was satisfied now.

Mr. **Vizer** said he was not by any means. He wanted to know whether they were to elect Mr. Evans again or not.

Mr. **Carteighe**: He declined to answer your question.

Mr. **Vizer**: Then I shall move another resolution, that Mr. Sugden Evans be requested to retire from the Society.

Mr. **Urwick**: I beg to second that resolution.

Mr. **Schacht** begged leave to recall the attention of the meeting to the resolution which he had proposed, and which was still before it. He had slightly modified it, and would now read it as amended, as he should be sorry for the question to be entirely shelved.

> "That this meeting is of opinion the means hitherto adopted by the Society to supply the educational wants of its members are no longer adequate to the necessities of the times; and it respectfully urges upon the new Council the desirability of considering some scheme by which the resources available for such purposes may be more generally distributed."

The resolution in this form was then put and carried unanimously.

Mr. **Russell** said he wished to ask a question particularly affecting the country trade, viz., whether anything was to be done with regard to the abolition of the Patent Medicine Licence, and the recommendation of the Council for the abolition of the Stamp Duty.

Mr. VIZER: I have moved a resolution that Mr. Sugden Evans be requested to retire from the Society.

The SECRETARY: You cannot move that.

Mr. URWICK: After the complaints which have been made against him, I think it would be much better.

Mr. VIZER: I mean as a member of the Council, not of the Society.

Mr. CARTEIGHE: The bye-laws will not allow him to withdraw his name as a candidate. He cannot do anything until he is re-elected, and then he may resign if he think fit.

Mr. DICKINSON: Then we shall not be here.

Mr. URWICK: We had better pass a resolution, asking him to retire if he is elected.

The CHAIRMAN said he was placed in a very unpleasant position, but in his opinion this question could not be entered on at the present meeting, but would recommend to the attention of the members the bye-law which provided for the case of any member who was accused of committing any act subversive of the interests of the Society.

Mr. VIZER said that bye-law did not touch the case of a member of the Council.

The SECRETARY said he was anxious to obtain the names of twelve gentlemen who would act as scrutineers.

Mr. DICKINSON: Never mind the scrutineers; let us have this out first. A gentleman here has moved, and another has seconded it, to the effect that this meeting disapproves of Mr. Evans being a member of the Council, or President of the Society. Surely there is no harm in passing such a resolution as that. It does no harm and no good. It is only an expression, and will go for what it is worth.

Mr. COLLINS: I disapproved of the whole matter as much as any one; but I say you are proposing a resolution which it is not competent to the Chairman to receive.

The CHAIRMAN: I could not put such a resolution as that. I could say a good deal on the subject if necessary, for I am as much opposed to co-operative societies as any one.

Mr. FLUX: I would venture to put to the gentlemen whether a certain responsibility in connection with an action for libel would not attach to the putting of this resolution, and whether it would not be better not to press it. The proceedings of this meeting will be published, and this is a personal attack.

Mr. VIZER: It is not a personal attack.

Mr. URWICK: We want to know whom we shall elect to represent us.

Mr. WATTS said it had been stated a short time previously that if the President refused to answer the question, it was to be telegraphed all over the country, north, south, east, and west. Surely that was making it a personal matter.

Mr. MORSON asked what would be thought of the Society when these proceedings were published. He had heard the observations which had been made with the deepest regret, and he was not at all sure that one gentleman had not subjected himself to an action for libel. He was willing to believe that it had been done with good intent, but the Society could only be injured by this sort of proceedings. He did hope they would endeavour to maintain the dignity of the profession, and not turn that room into a bear garden.

Mr. VIZER said he would withdraw his resolution, as he was quite satisfied with the expression of feeling which had been elicited; and he thought after what had passed, Mr. Sugden Evans, if he had any proper feeling, would not serve on any future Council.

Mr. RUSSELL said his question with regard to the Patent Medicine Licence and the Stamp Duty had not been answered.

Mr. SANDFORD said no action was being taken, or in contemplation, on that subject.

Mr. RUSSELL said he was very glad to hear it, as it would materially affect the interests of one-half the druggists in the country.

The requisite number of scrutineers was then appointed, and the meeting was adjourned to Friday the 20th, at 12 o'clock, after a vote of thanks to the Council had been passed, on the motion of Mr. Watts.

THE CONVERSAZIONE.

After a long and weary day devoted to the affairs of the Society, it was a great relief to escape from the scene of contention, and to find a cooler and better atmosphere at South Kensington, where arrangements had been made for holding a conversazione in the evening. How delightful was the transition from the crowded theatre in Bloomsbury Square to the courts and galleries of South Kensington Museum; from the excitement of prolonged discussion to a quiet promenade among the rare and choice productions of art which are so profusely distributed in our national Art Gallery; from the clamour of tongues and the contest of angry words, to the society of those whose presence we seek when weary of work, and the enjoyment of harmonious sounds which tend to soothe the excited mind, to soften and enlarge the heart, and to reconcile man to his fellow-man!

The doors of the Museum were thrown open at eight o'clock, and from that time until past ten, the company continued to arrive in a continuous stream, well filling but not overcrowding the parts of the Museum usually occupied on such occasions. There were, of course, no objects of special pharmaceutical interest exhibited on this occasion beyond those belonging to the Museum; but with a company such as had met, and music the best of its kind, in addition to the ordinary attractions of the interesting collection of works of art in the Museum, there seemed to be nothing wanting to render the occasion one of unmixed satisfaction. Indeed the absence of everything tending to remind the company of their everyday occupations was rather advantageous than otherwise; they had not met for the discussion of questions relating to trade or science, but for social intercourse and the cultivation of good feeling one with another. We believe this object was not only adhered to, but successfully accomplished, and the presence of ladies contributed greatly to this result.

The President, Vice-President, and several other members of the Council were engaged through the greater part of the evening in receiving the company, who then distributed themselves throughout the building, some admiring the objects that most attracted their attention, including the beautiful collection of pictures, among which are those of the late Jacob Bell; some listening to the music performed by the band of the Grenadier Guards, conducted by Mr. Dan Godfrey; and others to the vocal performances of the Orpheus Glee Union, under the direction of Mr. E. Fagan. These glees formed a very attractive part of the entertainment. They were given in the lecture theatre, which, we were informed, accommodates about a thousand persons, and it seemed to be full throughout the entire evening. It is due to Mr. Owen and other officials of the Museum to say that the arrangements made, and the attention and civility shown to the company, were all that could have been desired. To Mr. Owen especially the Council are indebted for the great pains he took to guard against every source of annoyance, and render the entertainment a success. The number present was nearly three thousand, including a very large number of medical and scientific men. We particularly noticed among the company,—Sir John Bowring, Sir William Tite, M.P., Dr. Brewer, M.P., Professor Ansted, Professor Guthrie, Professor Barford, Professor Soubeiran, of Paris, Professor Tidy, Professor Tuson, Dr. Hooker, Dr. Headlam Greenhow, Dr. Letheby, Dr. Langdon Down, Dr. Silver, Dr. Birkett, Dr. Tweedie, Dr. Playfair, Dr. Radcliffe, Dr. L. S. Beale, Dr. Septimus Gibbon, Dr. Murchison, Dr. F. J. Farre, Dr. Sidney Ringer, Dr. F. Ramsay, Dr. Silvester, Dr. R. H. Semple, Dr. Ballard, Dr. Vinen, Dr. Grimes, Dr. Jackson, Dr. Copland, Dr. Aldis, Dr. Greenhalgh, Dr. Tanner, Dr. Anderson, Dr. Dobell, Dr. Thompson, Dr. Francis, Dr. Bradley, Dr. Miller, Dr. Alison, Dr. Dickson, Dr. Billing, Mr. P L. Simmonds, Mr. Jabez Hogg, Mr. George Cruikshank, Miss Garrett, etc.

ADJOURNED ANNUAL MEETING.

May 20th, 1870.

H. SUGDEN EVANS, ESQ., PRESIDENT, IN THE CHAIR.

Present—Messrs. Haselden, Hills, Morson, Deane, Carteighe, Sandford, Fowler, Horton, Andrews, Bourdas, Redwood, and Whitfield.

Mr. Flux was in attendance.

The **Chairman**: The business of this meeting is, as you are all aware, to receive the Report of the Scrutineers with regard to the election of the new Council. I will, therefore, call upon the Chairman of the Scrutineers to bring up the Report.

Mr. **Andrews**: Mr. Chairman, the number of voting-papers received was 1478, and we were obliged to disallow for informality 83. I have a Report here in my hand which yesterday I had every reason to believe was a true and correct Report; but, I am sorry to say that, since the termination of the meeting, circumstances have come to my knowledge, which I have every reason to believe are true, and which will most certainly invalidate the correctness of this Report. I have therefore, Sir, to ask that this meeting may be adjourned for a fresh scrutiny; and as the number of papers that have been received is almost unparalleled, and consequently the amount of labour which the Scrutineers have had in making this Report has been very heavy, if it is in your power, or in the power of the Council, to do so, I must request that they will allow us some professional aid. It is a most serious and arduous undertaking, and it may be an invidious one in the present state of the Society; and I should, therefore, most certainly like to have some competent person, such as an accountant, or whoever you may think fit, if you have power to do so, to aid us in this matter.

Mr. **Carteighe**: Sir, under these circumstances, the necessity for which I myself most deeply regret, I beg to move, That a fresh scrutiny be held, and that the assistance of a professional accountant be secured for Monday next.

Mr. **Morson**: I beg leave to second that.

Mr. **Horton**: This matter has taken me very much by surprise, as I only heard of it two hours ago; but I beg leave most heartily to support the resolution. My reason for doing so is, that I was engaged there from ten o'clock till half-past five yesterday, and I suffered most seriously from it—in fact, I was very ill indeed in the evening; and I should be very sorry indeed to have to go through the same duty a second time. I believe it will be settled much more easily if we have the aid of an accountant.

The **Chairman**: I will put it to the meeting. It has been moved by Mr. Carteighe, seconded by Mr. Morson, and supported by Mr. Horton,—

> "That a fresh scrutiny be taken, and that the aid of a professional accountant be obtained for the assistance of the scrutineers."

The resolution was put, and carried unanimously.

Mr. **Andrews**: My idea was that the Council would appoint an accountant.

Mr. **Flux**: It is quite competent for this meeting to appoint an accountant.

Mr. **Deane**: Perhaps Mr. Flux or Mr. Bremridge can suggest a suitable person to apply to.

Mr. **Flux**: Contemplating the possibility of this course being taken, and feeling certain that if you did employ an accountant you would like to have one beyond all possibility of reproach, I, in a private way, this morning communicated with the first firm of the day, and obtained a pledge from the senior partner of that firm that, if they were resorted to, one of the partners would give his personal attention to the matter. The name of that firm is Turquand, Youngs, and Co. I do not think any accountant would dispute the proposition that they are the first firm of the day. They are concerned for the Bank of England.

Mr. **Carteighe**: I beg to move, "That Messrs. Turquand, Youngs, and Co. be requested to act as accountants in assisting the Scrutineers on Monday next."

Mr. **Sandford**: I shall be glad to second that.

The **Chairman**: It is moved and seconded,—

> "That Messrs. Turquand, Youngs, and Co. be requested to act as accountants in assisting the Scrutineers."

The resolution was put, and carried unanimously.

The **Secretary**: Perhaps the Chairman of the Scrutineers will kindly tell the meeting how the voting-papers are dealt with.

Mr. **Andrews**: There were sixteen Scrutineers appointed. It is usual for them to divide themselves into parties of four; of these four one acts as reader or chairman of the section, and the other three take down the votes. This was done yesterday. The papers of each section after the meeting were very carefully collected: they were made into a parcel, tied up and sealed, and signed by the chairman of each section. They were then placed in the box; it was locked, and the key was given to me, and it has not been out of my possession for a moment. It is utterly impossible, therefore, that the votes can have been interfered with since.

Mr. Carteighe: In fact, Mr. Chairman, when the accountant whom you have voted for our assistance opens that box, and we allow him to take the papers, he will be able to judge where the errors arose in the subsections into which the papers were divided.

Mr. Flux: I should venture to hope that the Scrutineers will maintain the custody of the papers, and not commit them to the accountant or to anybody else; that they will consider themselves responsible, and that others are only assisting them in their duty.

The Chairman: I should suggest that Mr. Andrews still keep the key of the box.

Mr. Carteighe: I will now move that we adjourn until Tuesday next, at 12 o'clock, to receive the further report of the Scrutineers.

Mr. Deane: I beg to second that.

Mr. T. H. Hills: Before putting that, I suppose messages by telegraph, or in some other way, will be sent to all the Scrutineers, in order to secure their attendance.

Mr. Carteighe: I apprehend that is the duty of the Registrar.

The Chairman: I think it is the duty of the Chairman of the Scrutineers to arrange all that.

Mr. Morson: There will be plenty of time between this and Monday.

Mr. Carteighe: I apprehend what Mr. Hills means is, that the Society will not stand in the way of any expense which may be incurred in getting them together.

The Chairman: Certainly not. It is moved and seconded that this meeting be adjourned until Tuesday next, at 12 o'clock.

Mr. Carteighe: Is it necessary to advertise the adjournment?

Mr. Flux: I am not conscious of any necessity for so doing.

Mr. Andrews: I certainly think some notice ought to be published that this meeting is adjourned; how else are the body of members to know it? This is taken so generally as a *pro formâ* meeting, and everything goes on so smoothly, that no one of the large body of members will think of attending, unless it is made known in some way. I should like to see a large number of gentlemen here.

Mr. Flux: There can be no objection to an advertisement, if it is desired and called for by this meeting. The question put to me was whether it was a necessity, and I thought not.

Mr. Morson: No, not a necessity; but I think it is very desirable that a number of members should attend.

Mr. Andrews: I do not know whether, when I spoke before, I sufficiently expressed my regret at this having occurred; but I do not know of anything which has ever happened which has given me so much anxiety.

Mr. Morson: And very naturally.

Mr. Horton: Before this meeting is adjourned, I desire to fully endorse what Mr. Andrews has said. I hope some notice will be given of the adjourned meeting, and that there will be the fullest investigation into this unpleasant business.

Mr. Carteighe: I beg to move that a notice of the adjournment be advertised in all the London morning papers, if possible on Saturday, and on Monday next.

Mr. Deane: I second that with great pleasure.

Mr. Flux: You had better not say *all* the London morning papers; there are so many now published in nooks and corners. You had better specify them.

The Secretary: We had better say the 'Times,' 'Telegraph,' 'Daily News,' and 'Standard.'

Mr. Hills: Let us have an evening paper as well—the 'Pall Mall Gazette' and 'Echo.

Mr. Bourdas: I would suggest that we send a notice to every member.

Mr. Sandford: No; I do not think that is necessary.

The Chairman: It is moved and seconded that notice of this adjourned meeting be advertised in the 'Times,' 'Pall Mall Gazette,' 'Echo,' 'Daily Telegraph,' 'Daily News,' and 'Standard.'

The resolution was put, and carried unanimously.

The Chairman: It is also moved and seconded that this meeting do stand adjourned until Tuesday next, at 12 o'clock.

The resolution was put, and carried unanimously.

The CHAIRMAN: This meeting, gentlemen, now stands adjourned to Tuesday next, at 12 o'clock.

ADJOURNED ANNUAL MEETING.

May 24th, 1870.

H. SUGDEN EVANS, ESQ., PRESIDENT, IN THE CHAIR.

The CHAIRMAN: Gentlemen, the object of this meeting is to receive the report of the scrutineers, therefore I call upon the Chairman of the scrutineers to bring up his Report.

Mr. ANDREWS: Gentlemen, I have here two Reports; one which was made on Thursday last, and one which was made yesterday. So much time has already been lost in presenting the result of our labours to the Society, that I shall not make a speech this morning, but say the few words which I think absolutely necessary that I should make, both on my own part, and on the part of the scrutineers. The result of yesterday's labour was to show a most wide and marked discrepancy between that and the result of Thursday. I must explain that in three of the sections, viz. section No. 1, section No. 3, and section No. 4, the discrepancies were such as might have occurred to the most honourable, careful, and business-like man, in the way in which the scrutiny is conducted; but in section No. 2, the discrepancies were such that they cannot be accounted for in that way. No less than 100 votes have been taken from one gentleman, and no less than a few over 70 have been added to another, and 50 to another. The gentleman from whom the votes have been abstracted is in no better position than he was before, except in this respect, that he stands sixth on the poll, instead of tenth, but the gentlemen to whom those votes have been added, do appear to me to stand in a most painful position. "Save me from my friends," is all I have to say, if that is the way in which individuals are to show their friendship. I know those two gentlemen—I may say we all of us know those two gentlemen—to be men of most unimpeachable honour and integrity; but malice is of such a nature that no one is too high or too low to be beyond the reach of its shafts. Those gentlemen, therefore, I say, are placed in a most painful position; I think the conduct which has led to their being put in that position is very bad, and I will say no more. I will now hand in these two papers. I do not know whether you wish me to read them, or whether they will be read presently.

The CHAIRMAN: Perhaps they had better be read presently.

Mr. ANDREWS: I think so: I wish my duty ended there; but I am desired, I may say I am commanded by my fellow-scrutineers, to read to this meeting the following special report:—

To the General Meeting of the Pharmaceutical Society of Great Britain, and to the Council of the same Society.

The undersigned Scrutineers herewith present two reports, the earlier of them erroneous, and the latter of them believed to be correct, and so ascertained with the aid of the Accountants, appointed by the adjourned general meeting; and the undersigned specially report that Mr. William Dickinson, a member of the Society, who acted as a Scrutineer, and as such signed the earlier report, admitted at the table of the Scrutineers this day that he well knew that the earlier report was not accurate at the time when he signed it, and that he had purposely misled his fellow-Scrutineers in the scrutiny.

Dated this 23rd day of May, 1870.

FREDERICK ANDREWS, *Chairman*.
WILLIAM GULLIVER.
MATTHEW POUND.
STANLEY FOWLER.
ALFRED SHEPPARD.
JOHN SKIDMORE.
ARTHUR T. HORTON.
JOSEPH KETTLE.
EDWIN B. VIZER.
FREDERICK TIBBS.
ALEX. HEMINGWAY.
BENJ. M. TIPPETT.

It is signed by the whole of the gentlemen who were then present. More than this it was not considered advisable for us, as scrutineers, to do; less, we could not do, in justice to ourselves.

Mr. **Horton**: As one of the scrutineers appointed by the general meeting, and more particularly concerned at the table at which Mr. Dickinson presided, with my friend Mr. Fowler, may I be allowed to ask one question of Mr. Young?

Mr, **Flux**: You may expect him in a minute or two.

Mr. **Horton**: My question is, Whether it was not possible for the Chairman of the section to make a false statement to his colleagues without their knowledge? I ask this question, because Mr. Dickinson has publicly charged myself and Mr. Fowler with knowingly assisting him in making a false statement.

Mr. **Andrews**: I beg to say, it is quite within the power of any chairman of a section under our present regulations, to mislead those gentlemen who act as clerks, and I beg to say most distinctly, that I am quite certain that neither Mr. Horton, nor Mr. Fowler, nor the other gentleman, who were acting as clerks in section No. 2, knew what was going on. They may at one time, and, I think, when it was too late, have had some suspicions, but to say that they knew, or had any complicity in the matter is abominable.

Mr. **Wellington** (of Oakham): Perhaps I ought to apologize for not putting in my appearance yesterday; but I did not receive my letter till too late for the early train, so that I should not have been here in time if I had started, or I should most certainly have done so. I feel, as every other gentleman must feel, who acted as scrutineer upon that day, that our character is assailed in a way that ought publicly to be cleared up, that we ought to receive a public apology in this room from Mr. Dickinson, or any other gentleman who has charged us with doing wrong. I venture to say, that at our table not a wrong was done. I care not who the man is who charges us with wrong, but I would tell him at once that it was a falsehood.

The **Chairman**: Will Mr. Andrews now be kind enough to read those Reports?

Mr. **Andrews**: If you please, Sir; the first is dated May 19th, 1870:—

"We, the undersigned Scrutineers, appointed at the Twenty-ninth Annual General Meeting of the Pharmaceutical Society of Great Britain, do hereby certify that we have examined the voting-papers committed to us, and report the following results:—

Voting-papers received......... 1478
Disallowed for informality ... 83

1.	Abraham	962
2.	Atherton	780
3.	Barnes	328
4.	Betty	385
5.	Bottle	894
6.	Breton	152
7.	Brown	1064
8.	Carr	205
9.	Edwards	838
10.	Evans	802
11.	Gissing	681
12.	Greenish	363
13.	Groves	792
14.	Hanbury	771
15.	Haselden	845
16.	Hornsby	360
17.	Quiller	297
18.	Reynolds	1018
19.	Sanger	588
20.	Savage	874
21.	Savory	594
22.	Stacey	397
23.	Stoddart	985
24.	Stott	342
25.	Sutton	745
26.	Williams	659
27.	Woolley	1053

Frederick Andrews, *Chairman*.
John Skidmore.
Chas. B. Bell.
Arthur T. Horton.
William Gulliver.
Edwin B. Vizer.
Joseph Kettle.
Benj. M. Tippett.
Matthew Pound.
Alex. Hemingway.
Wm. Dickinson.
Alfred Sheppard.
Jas. M. Wellington.
Frederick Tibbs.
Stanley Fowler.

May 19*th*, 1870."

"We, the undersigned Scrutineers, appointed at the Twenty-ninth Annual General Meeting of the Pharmaceutical Society of Great Britain, having this day re-examined the voting-papers committed to us, do hereby report the following result:—

1.	Abraham	954	10.	Evans	905	19.	Sanger	512
2.	Atherton	720	11.	Gissing	688	20.	Savage	902
3.	Barnes	325	12.	Greenish	355	21.	Savory	593
4.	Betty	379	13.	Groves	780	22.	Stacey	384
5.	Bottle	893	14.	Hanbury	762	23.	Stoddart	1004
6.	Breton	147	15.	Haselden	851	24.	Stott	347
7.	Brown	1063	16.	Hornsby	358	25.	Sutton	740
8.	Carr	198	17.	Quiller	299	26.	Williams	604
9.	Edwards	839	18.	Reynolds	1012	27.	Woolley	1064

FREDERICK ANDREWS, *Chairman*.
EDWIN B. VIZER.
ARTHUR T. HORTON.
JOHN SKIDMORE.
JOSEPH KETTLE.
FREDERICK TIBBS.
WILLIAM GULLIVER.
MATTHEW POUND.
STANLEY FOWLER.
ALFRED SHEPPARD.
BENJ. M. TIPPETT.
ALEX. HEMINGWAY.

May 23rd, 1870."

Mr. VIZER: I feel rather personally upon the question that is before the meeting this morning, and when I found that there was the probability of a discrepancy in our returns, I must confess I went home somewhat downcast, inasmuch as having taken rather a prominent position in the previous morning's meeting, I felt that my character, perhaps, was particularly at stake with respect to this question. But I hope that every gentleman here will believe that I should not lend myself to such a diabolical act, which I regret one of our members has stained his hands with. Therefore, I do most earnestly hope that it may go forth that certainly I am not a party in any way to this discrepancy, and that whatever my personal feelings may be in fact, I may say that I acted not so much from personal feeling as upon a question of principle with regard to the position of the party of whom I spoke; therefore, under those circumstances, every scrutineer who served that morning should have his character most distinctly and fully cleared. My own opinion is, that the Council ought to pass some such resolution as will completely take away any possibility of a shadow of a doubt as to the character of those gentlemen who served unfortunately with Mr. Dickinson.

The CHAIRMAN: Mr. Young has just arrived, and has, I understand, a short report to make, which will probably answer all the purposes which Mr. Vizer has suggested.

Mr. YOUNG: I have to apologize for being somewhat late, but I will read the short report which I have drawn up, and shall be very happy to afford you any further information which you may require.

16, *Tokenhouse Yard, E.C.,*
London, 23*rd May*, 1870.

REPORT OF TURQUAND, YOUNGS AND CO.

We beg to report that in compliance with a resolution passed at a meeting of the Pharmaceutical Society of Great Britain, held on Friday, the 20th May, 1870, we have, in conjunction with such of the scrutineers as would again undertake the office of scrutineer, carefully examined the whole of the voting papers, having, in each of the four sections, one of our assistants either giving down the names of the candidates for whom votes were recorded, or checking the gentlemen who called the names, and another recording the votes in each section.

The result of the scrutiny of Thursday, as compared with that conducted by us today, will be seen on reference to the annexed statement marked A, which shows the number of votes recorded in favour of each candidate, according to the respective returns, and the difference, in each case, between Thursday's return and that of today. The only material discrepancies occur in Section No. 2, in which the following candidates were accorded more votes than were really given in their favour, viz.:—

No. 19 . . . . 76 votes.
" 26 . . . . . 49 "
— 125

And the following candidates had less votes recorded in their favour than the voting papers entitled them to, viz.:—

No. 10	110 votes.
„ 15	11 „
„ 20	33 „
„ 23	21 „
„ 27	18 „
	— 193

Other smaller discrepancies, it will be seen, occurred, partly in consequence of some of the voting papers being informal, by a larger number of votes being allowed to remain than the prescribed number, but they are not of much importance, the greatest difference in the votes for any one candidate being in Section No. 1 four, No. 3 four, and No. 4 eight.

TURQUAND, YOUNGS AND CO.
Public Accountants.

A.

No. in Voting Papers.	Names of Candidates.	No. as per Scrutiny on Thursday.	No. as per Scrutiny on Monday.	Number of Votes.		Increase.	Decrease.
				As per Scrutiny on Thursday.	As per Scrutiny on Monday.		
27	Woolley, George Stephen . . .	2	1	1053	1064	11	
7	Brown, William Scott	1	2	1064	1063		1
18	Reynolds, Richard	3	3	1018	1012		6
23	Stoddart, William Walter . . .	4	4	985	1004	19	
1	Abraham, John	5	5	962	954		8
10	Evans, Henry Sugden	10	6	802	905	103	
20	Savage, William Dawson . . .	7	7	874	902	28	
5	Bottle, Alexander	6	8	894	893		1
15	Haselden, Adolphus Frederick .	8	9	845	851	6	
9	Edwards, George	9	10	838	839	1	
13	Groves, Thomas B.	11	11	792	780		12
14	Hanbury, Cornelius	12	12	771	762		9
25	Sutton, Francis	13	13	745	749	4	
2	Atherton, John Henry	14	14	730	720		10
11	Gissing, Thomas Walter . . .	15	15	681	688	7	
26	Williams, John	16	16	659	604		55
21	Savory, Charles Harley	17	17	594	593		1
19	Sanger, William Albert. . . .	18	18	588	512		76
22	Stacey, Samuel Lloyd	19	19	397	384		13
4	Betty, Samuel Chapman . . .	20	20	385	379		6
16	Hornsby, John Harwood . . .	22	21	360	358		2
12	Greenish, Thomas	21	22	363	355		8
24	Stott, William.	23	23	342	347	5	
3	Barnes, James B.	24	24	328	325		3
17	Quiller, Charles Rowett . . .	25	25	297	299	2	
8	Carr, John	26	26	205	198		7
6	Breton, Walter	27	27	152	147		5
	Totals .			17,724	17,687	186	223

The CHAIRMAN: I think the meeting will have received Mr. Young's report with satisfaction, as far as all the other scrutineers are concerned, and I hope it will be satisfactory to those scrutineers who are present.

Mr. WILLIAMS: As my name, I find, is one of those who have benefited by this fraud which has been perpetrated, I trust I may be allowed to say, and say distinctly and emphatically, that I am no party in any way, directly or indirectly, to it. I trust, Sir, that the very few words I wish to say will be sufficient for the meeting, and that the impression will not be left, that I am in any way the nominee, as I heard mentioned this morning, of Mr. Dickinson. I can assure you such is not the case. I had no communication or connection in any way with that gentleman, and I feel the greatest disgust and the greatest amount of indignation at the fraud which has been practised upon the Society.

Mr. SANGER: I regret very much that I am a nominee of this gentleman; and, therefore, I am afraid the meeting, or rather not the meeting, but the chemists at large, may think that I have had some hand in this. I am not speaking of those gentlemen who know me, and who are kind enough to show they know that I should not do such a thing; but the chemists at large might think, as he has nominated me, that I might have had something to do with it. I can assure you most strongly, and I hope it will appear publicly, that I had no hand whatever in it; and if any one had asked me how Mr. Dickinson would have acted, I should have said thoroughly as a gentleman. I never knew anything against him, or I should not have asked him to nominate me. I asked him because I thought his position in the business was such that it would assist me if he nominated me. Of course I very much regret not being elected, but that is one of the chances of war. I trust that whatever you let go forth to the public, it will bear Mr. Williams's and my emphatic denial of any knowledge whatever of this unfortunate affair; and as far as any advantage accruing to us by it, it was really nothing. We were refused by the country beforehand, there is no doubt.

Mr. FLUX: May I be permitted to add a statement to those which have been made, in exoneration of all the gentlemen, other than Mr. Dickinson? and it is to this effect, that he personally attended the meeting of the Scrutineers yesterday morning, and, I think, that when they were assembled, and when the machinery was complete which would have led to that result which has now been before you, Mr. Dickinson in the room made a statement to the purport that he, and he alone, had falsified the returns, that he did it knowingly and purposely, and the only excuse which he made for himself was, that he saw that the system pursued was a very rotten one, and he did it to show how rotten the system was. How far that excuse will hold him good in the minds of gentlemen capable of judging, I say nothing about; but I thought it right to state the fact of that admission on the part of Mr. Dickinson. He went further, and turning to the gentlemen who were at his table, of section No. 2, said to one or two of them, "I completely exonerate you," and was replied to, to the purport, that they needed none of his exoneration, and I really concurred in that observation.

Mr. YOUNG: May I be allowed to say that that statement was made in my presence as well as in that of Mr. Flux.

The CHAIRMAN: It becomes my duty to declare the following gentlemen elected to the new Council:—

Council, 1870–71.

ABRAHAM, JOHN, 87, Bold Street, Liverpool.
ATHERTON, JOHN HENRY, Long Row, Nottingham.
BOTTLE, ALEXANDER 37, Townwall Street, Dover.
BOURDAS, ISAIAH, 7, Pont Street, Belgrave Square.
BRADY, HENRY BOWMAN, 29, Mosley Street, Newcastle-on-Tyne.
BROWN, WILLIAM SCOTT, 113, Market Street, Manchester.
DEANE, HENRY, Clapham, S.W.
DYMOND, GEORGE, 17, Bull Street, Birmingham.
EDWARDS, GEORGE, Dartford, Kent.
EVANS, HENRY SUGDEN, 60, Bartholomew Close, E.C.
GROVES, THOMAS B., 80, St. Mary Street, Weymouth.
HANBURY, CORNELIUS, Plough Court, Lombard Street, E.C.
HASELDEN, ADOLPHUS FREDERICK, 18, Conduit Street, W.
HILLS, THOMAS HYDE, 338, Oxford Street, W.
MACKAY, JOHN, 119, George Street, Edinburgh.
REYNOLDS, RICHARD, 13, Briggate, Leeds.
SANDFORD, GEORGE WEBB, 47, Piccadilly, W.
SAVAGE, WILLIAM DAWSON, 30, Upper Bedford Street, Brighton.
STODDART, WILLIAM WALTER, 9, North Street, Bristol.
SUTTON, FRANCIS, Bank Plain, Norwich.
WOOLLEY, GEORGE STEPHEN, 69, Market Street, Manchester.

Only the requisite number of Auditors having been nominated, the following were declared duly elected :—

Auditors.

BARRON, FREDERICK, 2, Bush Lane, Cannon Street.
HODGKINSON, WILLIAM, 127, Aldersgate Street.
MACKEY, JOHN BRUNT, 15, Bouverie Street.
SQUIRE, WILLIAM, 5, Coleman Street.
WESTWOOD, ROBERT, 16, Newgate Street.

Mr. CARR : I should like to ask whether the Council are going to take any action in this matter. A very great public scandal has arisen, and I do not think we ought to separate this morning without passing a very strong resolution about Mr. Dickinson. It is the most un-English conduct that has ever occurred probably in this Society. We have the same kind of ballot in our vestry, and nothing could be more fair, and nothing more just, in my opinion. I have watched it many years, and for a man to come publicly forward and acknowledge that he has falsified accounts, I think is the most unjust and abominable thing that could happen ; and I trust that we shall not separate this morning without passing a very strong resolution with regard to Mr. Dickinson's conduct.

The CHAIRMAN : The protest of the Scrutineers will go before the Council, and receive their consideration as soon as they meet in June.

Mr. CARR : I think the Council ought to take action in the matter.

Mr. ANDREWS : It is open to the meeting to express their opinion if they wish to do so.

The CHAIRMAN : Of course, that is simply the expression of the opinion of the Scrutineers. No doubt it is quite open to this meeting to pass any resolution it chooses with regard to the matter.

Mr. ANDREWS : I may say that resolutions of a much stronger character than that were proposed yesterday, but I have rather avoided them. If the gentlemen here present wish to pass another resolution, they can do so.

Mr. POUND : I think we had better leave it in the hands of the Council, to take such action in the matter as they may think proper. They cannot pass it over unnoticed.

Mr. CARR : Gentlemen, I have pleasure in moving the following resolution :—

> "That the Council be requested to take the Report of the Scrutineers into their earliest consideration, with a view to erasing the name of Mr. William Dickinson from the Register of Members."

Mr. WELLINGTON : I have very much pleasure in seconding that resolution.

Mr. CARR : Mr. Dickinson has proved a disgrace to us, and I think we ought to express our strong indignation at his conduct.

Mr. WELLINGTON : I presume, in passing that resolution, it can only be done by way of soliciting the aid of the Council, or requesting them respectfully to erase the name of Mr. Dickinson.

The CHAIRMAN : It must be the act of the Council.

Mr. WELLINGTON : Therefore, all we ask is, that the Council will do so-and-so.

The CHAIRMAN : Exactly.

Mr. WELLINGTON : A gentleman is anxious to know if the Council have the power. I presume they have ?

The CHAIRMAN : Oh, yes !

Mr. FLUX : The power is distinctly given by one of the bye-laws.

The resolution was carried unanimously.

Mr. SANGER : I wish to propose a vote of thanks to the scrutineers for the manner in which they have performed their rather arduous duties this year ; and I should like to see appended to it that this meeting considers that what they have done has been done thoroughly well. I hope that nothing will be said or thought against any other gentleman, but that this meeting will consider that they have done their work thoroughly well, and that we wish to pass them a vote of thanks.

Mr. WILLIAMS : May I be permitted to second that motion ? I am sorry it has been so much trouble to the scrutineers ; it is not our fault, but our misfortune.

Mr. Carr: I should like to ask Mr. Young whether he approves our way of voting by ballot. It is conducted somewhat differently to what I have seen before. There are a great number of scrutineers, and I think if our Secretary were made chairman, and several scrutineers were appointed, it would be better; and I should like to ask whether Mr. Young can suggest a different mode.

Mr. Carteighe: I am satisfied that it would be very grateful to the feelings of the scrutineers if we could make that resolution a little longer; it is rather too curt. I think they would like us to say, that we are thoroughly satisfied that they were perfectly honest and *bonâ fide* in what they did. I would suggest that something be added to the resolution of that character before it is put.

The Chairman: I will read the resolution as it has been amended by our solicitor:—

> "That the best thanks of the Society be given to the Scrutineers, with the sole exception of Mr. William Dickinson, and that this meeting do record its complete satisfaction with the manner in which the gentlemen thanked discharged their duties."

Before putting the resolution to the meeting, I must express my own sense of satisfaction and thankfulness to the scrutineers for the way in which they have met the difficulty, and the great pains and care which they have taken in bringing out a true and correct report.

The resolution was carried unanimously.

Mr. Andrews: I should like to say a few words in acknowledgment. I do thank you, gentlemen, most sincerely for the kind way in which you have received our services. For twenty-five years that I have been in connection with this Society, all my associations with it have been pleasurable until this one unfortunately occurred. I cannot find words to express how sorry I am that such a thing has happened. It has certainly shown me a weak point in our mode of conducting business, and I shall be prepared, at the proper time, if the Council wish me to do so, to suggest a way in which they can avoid such an accident in future. But that any gentleman should do an enormous wrong to show up another wrong, is something so absurd that I can hardly credit it. There must have been some other reason for it. On my own behalf, and on behalf of the other scrutineers, I beg leave to thank you for the kind manner in which you have acknowledged our services.

Mr. Young: My opinion with reference to the mode of voting is, that, if honestly carried out, the system is a very perfect and a very complete one. But, of course, if there is any attempt at misrepresenting the facts as to the votes, it can be done. There is no doubt about that; and what I would suggest would be simply this, that instead of what has been the practice heretofore, viz. one calling out from the voting-papers, and three taking down, there should be two calling it out, and three taking down. Yesterday we adopted that system. One of my clerks was in each section calling out, or checking the calling-out, and one was taking down, and the three lists of votes came out, without exception; in each section the tellers had taken down the whole numbers correctly, and against each name there came out the same number of votes. Therefore, if the one is calling out from the paper correctly, and those who take it down tally, I do not think there can be any more complete system of taking the votes. I would suggest, however, that in sending out the voting-papers, it would be a great advantage if the names were printed in more distinct character, and a little space left between them. It might be advisable that one of the gentlemen calling out the names, should put his initial to each name that he does call out, because it would be very easy to strike out a name, or two names, if one were inclined to do that afterwards, and the papers might be challenged as having been given out incorrectly. Another thing that I would suggest would be, that each of the papers should be numbered as the names are given out, and not only that, but that the papers should be examined, to see that not more than fourteen votes are left upon the papers; because in two or three of the sections yesterday we found informal papers, in consequence of fifteen names having been left, and that rendered the votes entirely informal and nugatory, and they had to be deducted from the list of votes. Beyond that, I really do not think there is any necessity for making any alteration in the system, which seems to me very complete in every respect.

Mr. **Pound**: Will you allow me to suggest, that when the papers are issued, the numbers only should be crossed, and not the names. The lines are drawn so indistinctly across, that it is very difficult to decipher which name is intended to be erased, but if the numbers only were crossed, there could be no mistake.

Mr. **Andrews**: And I think it should be compulsory that they should be erased in ink. Several were sent in only erased in pencil, which is not sufficient.

Mr. **Wellington**: Would there be any objection to this? that to each name there should be attached something to denote either that they were members of the Pharmaceutical Society, or Chemists and Druggists, or by examination. A great many of us in the country see the names, and we know no more about them than we do of the man in the moon. For my own part, I should very seldom vote for a Chemist and Druggist, because, I think, the time has come, or will very shortly be here, when the so-called Modified Examination will be knocked on the head. I am too old to pass an examination myself, but I am very anxious that the younger ones should do so; and I think the time has come when, if our Society is to be of any use at all, we must see qualified men, and no others, on the list. Therefore, I should certainly propose, if the Council think it desirable, that between the figures and the names, or after the names, it should be stated whether the candidate is an examined member, whether he is a member from old age, I may say, or whether he is only a Chemist and Druggist. I may be out of order in making the suggestion, but, I think, it would guide a very great many as to their votes.

The **Chairman**: It is done already. On the voting-paper which I hold in my hand, there are the letters P. C. to all the Pharmaceutical Chemists, and there is nothing to those who are Chemists and Druggists. The letters P. C. occur between the number and the name of those who are Pharmaceutical Chemists, and there are no such initials between the name and the number of those who are Chemists and Druggists.

Mr. **Wellington**: I should propose that where there has been an examination, it should be stated.

Mr. **Flux**: Perhaps you will allow me to say, that there is no such thing as a Pharmaceutical Chemist by examination. It is not examination which makes a gentleman a Pharmaceutical Chemist; it is the fact of his name being on the Register of Pharmaceutical Chemists. In my own profession, I confess, we should receive with astonishment any suggestion from the young and examined men (I am an examined man myself, and, therefore, can say it), that we should have a line drawn between us and those honoured seniors who have brought about the present state of things. But to come back to the point at which I started,—there is no such thing as a Pharmaceutical Chemist by examination. It is by the Register, and nothing else.

Mr. **Fowler**: If any one who takes an interest in the election of candidates will refer to the Register, that will be seen.

Mr. **Sandford**: Gentlemen are perhaps not aware that by-and-by there will be no members of this Society except those who have been examined. The chemists and druggists who were in business prior to the passing of the Pharmacy Act are now admitted to membership, but hereafter there will be no chemists and druggists members of this Society; they will all be pharmaceutical chemists, and all will be examined.

The **Chairman of Scrutineers** handed in to the President their report of the nominations for Local Secretaries.

The **Chairman**: Gentlemen, that is the conclusion of our business, and I have to thank you for your attendance here to-day.

Mr. **Hills**: I beg to move a vote of thanks to the Chairman. He has had a very arduous duty to perform; and I am sure we are all of opinion that the best thanks of the meeting are due to the Chairman for the manner in which he has performed the duty.

Mr. **Carr**: I beg to second that.

The resolution was carried unanimously.

The **Chairman**: I thank you, gentlemen, very much for your vote of thanks, and I assure you that I appreciate it most heartily. Never, perhaps, in the course of my life have duties more arduous or more painful fallen to my lot.

LETTER FROM MR. DICKINSON.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—Hearing that some disapprobation was expressed at my not attending the declaration of the Scrutineers of votes for Members of Council yesterday, I wish to explain that I did not absent myself in order to avoid the situation I had placed myself in, or from any desire not to take the full responsibility of my conduct in the matter. I was put on the scrutiny against my expressed objection; I was totally ignorant of the method by which the scrutiny was taken, and honestly set to work to do the duty; but finding the system was liable to errors, in a moment of somewhat excited feelings I resolved so far to vitiate the return as to obtain an alteration of so unsatisfactory a plan. I entirely repudiate any premeditation or malice; it was accidentally commenced, and continued without any attempt at concealment, fully believing that anything I did would not alter the return of any one to the Council. The distribution of the votes was purely a fancy; the subtraction from Mr. Evans was by no means on personal grounds, for I do not know him, and to him I owe an apology. I absolve, in the fullest degree, all others; and to my Co-Scrutineers I tender my regret and apology for having caused them so much trouble, annoyance, and painful feeling in the business. To the Society I shall tender my resignation through the proper officer. I have no wish to prolong any hostility to it, but had long since resolved never again to interfere or attend any of its proceedings, and was betrayed into attending this Annual Meeting on grounds that could be from circumstances of no personal or pecuniary advantage to myself. I hastily say this in good faith, and leave the subject to the lenient consideration and judgment of the Members of the Society.

I am, Sir, your obedient Servant,
WILLIAM DICKINSON.

May 25th, 1860.

PROVINCIAL TRANSACTIONS.

BRISTOL PHARMACEUTICAL ASSOCIATION.

Mr. SCHACHT read a communication upon linimentum saponis and linimentum potassii iodidi c. sapone; in the course of which he exhibited various samples both of the hard soaps of commerce and of the oleic acid,—hard soap prepared according to the suggestions of Mr. Wood; and explained the essential differences in them to be due to the varying proportions they contained of *stearate* of soda and *oleate* of soda. He showed, experimentally, how imperfectly the former, and how perfectly the latter dissolved in the weak spirit ordered to be employed, and that consequently pure *oleic* acid hard soap was the best to be used in making linimentum saponis. On the other hand, he exhibited several samples of linimentum potassii iodidi c. sapone, prepared with the above varieties of soap, and these clearly proved that linimentum potassii iodidi c. sapone was best made with the soap richest in *stearate* of soda, viz. good commercial curd soap.

Mr. W. LANT CARPENTER, B.A., B.Sc., delivered a lecture upon the elementary principles of spectrum analysis, explaining its uses and its extreme delicacy in the detection of minute quantities of metals, etc.

Having first briefly given the history of the subject from the well-known experiments of Sir I. Newton in 1675, to the recent observations of Lockyer and Huggins, the lecturer described the three orders or groups of spectra, viz.:—

1. Continuous, unbroken spectra, produced *only by incandescent solids or liquids*.
2. Spectra of coloured lines of light separated from each other, produced *only by an incandescent gas*. The spectra of the elements and of certain nebulæ belong to this order.
3. Spectra broken by dark lines, not produced by the source of light, but by other vapours or media which absorb certain portions of the light in its passage. The spectra of the sun and fixed stars belong to this order.

When speaking of the third kind, Mr. Carpenter explained the absorption bands of coloured fluids, and especially alluded to the preparations of the Pharmacopœia, described in a paper on the subject read by Mr. Stoddart at the Exeter meeting of the Pharmaceutical Conference.

Many specimens were exhibited, giving very brilliant and remarkable spectra, which most unmistakably showed the characteristic appearances of the several tinctures and solutions.

The whole lecture was illustrated with the aid of the electric light, by which a brilliant spectrum, six feet in length, was obtained, and by its means the various bands could be viewed with the greatest ease.

It was shown that no two elementary substances, in the gaseous condition, produce the same spectrum, hence they could be distinguished from each other by their spectra. The complexity of the spectrum of an element was frequently found to increase with the temperature employed in volatilization.

Very beautiful photographs—descriptive of the stellar and solar observations, by Messrs. Lockyer and Huggins—were shown by the oxyhydrogen microscope.

On the table were the different kinds of spectroscopes in general use for microscopic and other purposes.

"On the Colocynth Preparations of Recent Pharmacopœias." By Mr. Richard W. Giles.

It is probable that most Pharmaceutists have experienced difficulty in satisfying the public of the correctness of medicines containing colocynth pill or extract since the operation of the British Pharmacopœia, 1867. The remarks of patients tend to this conclusion,—that the compound extract, 1867, is a less active preparation than they have been accustomed to; and the colocynth pill, 1867, produces griping effects not occasioned by its precursor. It is probable that the comparison is made in both cases with the compound pill of 1851, which took the place of the previous extract (1836), and was in use for sixteen years as the sole officinal preparation.

The following table exhibits the percentage composition of the officinal colocynth preparations from 1836 to 1867:—

		Compound Extract.		Compound Pill.	
		1836	1867	1851	1867
Colocynth	Spirituous Extract (& moisture)	*18·367	*18·367	...	...
	Aqueous do. do.	...	...	†9·090	...
	Powder	...	...	...	18·182
Aloes	Extract (Socotrine)	48·979	48·979	54·540	...
	Crude (Barbadoes)	...	...	...	36·364
Scammony	Virgin	16·327	...	18·180	36·364
	Resin	...	16·327	...	...
Cardamoms		4·082	4·082	4·550	...
Soap	Hard	12·245	12·245	...	...
	Soft	...	...	13·640	...
Sulphate Potash		...	..	...	4·545
Oil of Cloves		...	...	...	4·545
		100·000	100·000	100·000	100·000

Note.—The apparently large yield of spirituous extract from 24·489 parts pulp is explained by the moisture present in the mass being estimated with the colocynth extract. The other ingredients being used in a dry state, the excess of total weight is represented as extract colocynth. Any confusion from this cause is obviated by its equivalent in colocynth pulp being stated, which admits of exact comparison of all four formulæ.

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* Equivalent to colocynth pulp . . . . . . 24·489

† „ „ „ „ . . . . . . 22·000

The difference between the extracts of 1836 and 1867 is confined to the substitution of scammony resin for virgin scammony, an alteration which most practical pharmaceutists will consider to be a change for the worse.

The important point is the difference in the preparations of 1867 from the eminently successful formula of 1851.

The pill of 1867 differs so widely from that of 1851 that we look in vain for a point of concord. If we could ascertain the objects of the propounders of the 1867 formula, we should probably find that they did not so much intend it to take the place of the pill of 1851 as to supply an authorized formula for the popular pil. cocciæ. Unfortunately, however, for ourselves, it is prescribed by the faculty, and received by their patients, in lieu of the similarly styled preparation of 1851, and we have the annoyance of being held responsible for the marked difference of its effects; the griping properties appear to be due to the double proportion of scammony present. They cannot depend upon the presence of crude aloes as they are exhibited when aqueous extract is substituted. The absence of soap, which might aid the solution of the crude aloes and of the large quantity of scammony, is a remarkable feature, not to be excused in a pharmacopœial preparation, because it was wanting in a popular medicine chiefly administered to robust stomachs.

The 1867 extract differs from the 1851 pill, in the employment of scammony resin before mentioned, and in reverting to the use of spirituous extract of colocynth in place of the aqueous extract directed in the 1851 formula. It is much to be regretted that the Pharmacopœia should betray an uncertainty as to the best mode of obtaining extract of colocynth, for which there is no reason. There can be no doubt that the aqueous process, when intelligently conducted, gives the best result, and is altogether free from any disadvantages. The diminished activity of the new preparation, as compared with the 1851 pill, is, in all probability, due to this change; and it is worthy of remark, that when the 1851 pill first came into use, Mr. Allchin called attention to its greater activity (as compared with the previous compound extract), and attributed it to the greater energy of the aqueous extract of colocynth. Mr. Allchin's paper, which was published in the 'Pharmaceutical Journal,' Vol. XII. p. 271, will give further interesting particulars upon this part of my subject, and will well repay any one for the perusal.

The following formula, which resembles in its essential features the compound pill of 1851, is suggested as being, in some respects, preferable to that or any other formula yet proposed for this important preparation:—

Colocynth Pulp	6
Aqueous Extract Barbadoes Aloes	12
Virgin Scammony	4
Powdered Cardamoms	1
Hard Soap	3

Exhaust the colocynth with water by successive maceration; operate upon sufficient crude aloes to yield the required amount of extract; evaporate down to suitable consistence; mix in the other ingredients, and cautiously reduce to the proper consistence.

The percentage results from the preceding formula will be as follows:—

Aqueous Extract Colocynth	*11·032
" " Aloes	53·382
Scammony (Virgin)	17·793
Cardamoms	4·448
Soap	13·345
	100·000

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* Equivalent to colocynth pulp, 26·700.

LIVERPOOL CHEMISTS' ASSOCIATION.

Fourteenth General Meeting, held at the Royal Institution, April 28th, 1870; the President, Mr. J. **Abraham**, in the chair.

The **Secretary** announced donations to the library of—'The Proceedings of the American Pharmaceutical Association,' 'Orme on Heat,' 'New York Druggists' Circular,' 'Proceedings of the Liverpool Architectural Society,' 'Proceedings of the Liverpool Historic Society.'

The thanks of the meeting were voted to the donors.

The discussion on the proposed regulations for the storing and dispensing of poisons was resumed by the **President** first reading the regulations, and offering a few explanatory remarks.

Mr. **Fingland** approved of the rules as being a good suggestion, but he thought it undesirable to make them compulsory.

Mr. **Barber** said that he had a great objection to putting "poison" on bottles on the shelves. It had been proposed to use "Part 1" and "Part 2" instead, and he thought that it would be much better to do so. Compulsory regulations were objectionable, as they would sooner or later entail inspection.

Dr. **Syme** said that several Poison Bills had been opposed by the Pharmaceutical Society, but, as it was impossible otherwise to obtain a Pharmacy Act, they consented to add a poison schedule. Now, however, they were siding with the Government, and actually adding to the list of poisons. No sooner was this done than it is proposed to fetter chemists in the prosecution of their business. He decidedly objected to be compelled to adopt any particular method, and thought that the country members did not get fair consideration at the hands of the Society, which was forgetting its mission,—the promotion of pharmaceutical education,—and imposing burdens which no one demanded.

Mr. **Thonger** thought Government justified in asking for regulations, as for some years there would still be ignorant and careless chemists. He believed that the labels partly covered with sand-paper were the best protection for bottles, etc., containing poisonous substances, and they are not expensive.

Mr. **Shaw** said that at all the meetings of chemists where these regulations had been discussed, their compulsory application had been condemned; and he could not understand why the Pharmaceutical Society should move in the matter in the absence of any popular demand for such restrictions. He read opinions of Mr. Bell, Mr. Ince, and the President in opposition to similar propositions.

The **President** said that the Pharmacy Act contemplated regulations, and that a pressure was being put upon the Society to make them use their powers. He had opposed the addition to the poison schedule, especially with regard to preparations, but he thought that the regulations were good in themselves, and that, if they imposed a responsibility on the chemist, they also would relieve him to a great extent if, in case of accident, he could show that he had observed them.

Mr. **Shaw** then proposed the following resolutions:—

"I. That in the opinion of this meeting it is not desirable, for the present, that the proposed regulations should have the force of law.

"II. That this meeting approves generally of the proposed regulations.

"III. That it should be left to each individual chemist to adopt what portion of them (with any additional one) he may consider necessary in the conducting of his own business."

Mr. A. H. **Mason** moved that the words "for the present" should be omitted from the first resolution.

Mr. **Redford** seconded the amendment, which was carried with one dissentient.

The amended resolution, "That in the opinion of this meeting it is not desirable that the proposed regulations should have the force of law," was then carried.

Several members spoke in opposition to the second resolution, on the ground that to express approval of the regulations would afford an argument for their being made compulsory.

It was then put to the meeting, and negatived.

Mr. **Shaw** then withdrew the third resolution, and the Secretary was instructed to forward the resolution which had been passed to the President of the Pharmaceutical Society, with a request that he would lay it before the meeting of the Society in May.

This concluded the business.

TAUNTON CHEMISTS' ASSOCIATION.

A meeting of this Association was held on Monday, May 2nd, to consider the propriety of closing their shops on Thursday evenings at 5 o'clock during the summer months, for the purpose of giving their Assistants a little recreation. The experiment was tried last summer, but was not quite unanimous; on the present occasion, however, the resolution was passed without a single dissentient.

A resolution was also passed, condemning the compulsory regulations respecting the keeping of poisons.

ORIGINAL AND EXTRACTED ARTICLES.

NOTICE OF THE LIFE OF THE LATE PROFESSOR GRAHAM,

Being the introductory part of a Lecture delivered at the Royal Institution "On Professor Graham's Scientific Work."

BY WM. ODLING, M.B., F.R.S.,
FULLERIAN PROFESSOR OF CHEMISTRY, ROYAL INSTITUTION.

The simple story of Mr. Graham's life, though not without its measure of interest, and certainly not without its lessons, is referred to in the following pages only in illustration of the grander story of his work. Thomas Graham was born in Glasgow, on the 21st December, 1805. He entered as a student at the University of Glasgow, in 1819, with a view to becoming ultimately a minister of the Established Church of Scotland. At that time the University chair of Chemistry was filled by Dr. Thomas Thomson, a man of very considerable mark, and one of the most erudite and thoughtful chemists of his day. The chair of Natural Philosophy was also filled by a man of much learning, Dr. Meikleham, who appears to have taken a warm personal interest in the progress of his since distinguished pupil. Under these masters Mr. Graham acquired a strong liking for experimental science, and a dislike to the profession chosen for him by his father; who, for a time at least, seems to have exerted the authority of a parent somewhat harshly, but quite unavailingly, to effect the fulfilment of his own earnest wishes in the matter.

After taking his degree of Master of Arts at Glasgow, in 1826, Mr. Graham worked for nearly two years in the laboratory of the University of Edinburgh, under Dr. Hope. He then returned to Glasgow; and, whilst supporting himself by teaching, at first mathematics and afterwards chemistry, yet found time to follow up the path of experimental inquiry, on which he had already entered.

His first original paper appeared in the 'Annals of Philosophy' for 1826, its author being at that time in his twenty-first year. It is interesting to note that the subject of this communication, "On the Absorption of Gases by Liquids," forms part and parcel of that large subject of spontaneous gas-movement with which Mr. Graham's name is now so inseparably associated; and that, in a paper communicated to the Royal Society just forty years later, he speaks of the liquefiability of gases by chemical means, in language almost identical with that used in this earliest of his published memoirs.

Having, in the interval, contributed several other papers to the scientific journals, in the year 1829 he published in the 'Quarterly Journal of Science'—the journal, that is to say, of the Royal Institution—the first of his papers relating specifically to the subject of gas-diffusion. It was entitled "A short account of Experimental Researches on the Diffusion of Gases through each other, and their Separation by Mechanical Means."

In the same year he became Lecturer on Chemistry at the Mechanics' Institute, Glasgow; and in the next year, 1830, achieved the yet more decisive step of being appointed Professor of Chemistry at the Andersonian University. By this appointment he was relieved from anxiety on the score of living; and afforded, in a modest way, the means of carrying out his experimental work.

In 1831 he read, before the Royal Society of Edinburgh, a paper "On the Law of the Diffusion of Gases," for which the Keith prize of the Society was shortly afterwards awarded him. Although several of his earlier papers, and especially that on the Diffusion of Gases, published in the 'Quarterly Journal of Science,' had given evidence of considerable power, it was this paper—in which he established the now well-recognized law that the velocities of diffusion of different gases are inversely as the square roots of their specific gravities—that constituted the first of what may properly be considered his great contributions to the progress of chemical science.

In 1833 he communicated a paper, of scarcely less importance, to the Royal Society of London, entitled "Researches on the Arseniates, Phosphates, and Modifications of Phosphoric Acid." It afforded further evidence of Mr. Graham's quiet steady power of investigating phenomena, and of his skill in interpreting results; or rather of his skill in setting forth the results in all their simplicity, undistorted by the gloss of preconceived notions, so as to make them render up their own interpretation. It is difficult nowadays to realize the independence of mind involved in Mr. Graham's simple interpretation of the facts, presented to him in this research, by the light of the facts themselves, irrespective of all traditional modes of viewing them. Their investigation let in a flood of light upon the chemistry of that day; and formed a starting-point from which many of our most recent advances may be directly traced. In this paper Mr. Graham established the existence of two new, and, at that time, wholly unanticipated classes of bodies, namely, the class of polybasic acids and salts, and the class of so-called anhydro-acids and salts. The views of Graham on the polybasicity of phosphoric acid were soon afterwards applied by Liebig to tartaric acid, and by Gerhardt to polybasic acids in general, as we now recognize them. After a long interval the idea of polybasicity was next extended to radicals and to metals by Williamson and myself successively; afterwards to alcohols by Wurtz, and to ammonias by Hofmann. The notion of anhydro-salts was extended by myself to the different classes of silicates; by Wurtz to the compounds intermediate between oxide of ethylene and glycol; and by other chemists to many different series of organic bodies.

The next most important of the researches, completed by Mr. Graham while at Glasgow, was the subject of a paper communicated to the Royal Society of Edinburgh, in 1835, "On Water as a Constituent of Salts," and of a second paper communicated to the Royal Society of London, in 1836, entitled "Inquiries respecting the Constitution of Salts," etc., for which latter a Royal Medal of the Society was afterwards awarded. The subject of hydration had yielded him such a harvest of results in the case of phosphoric acid, that it was only natural he should wish to pursue the inquiry further. Indeed, it is a curious illustration of the persistency of the man, that he never seems to have left out of sight the subjects of his early labours. Almost all his subsequent original work is but a development, in different directions, of his youthful researches on gas-diffusion and water of hydration; and so completely did he bridge over the space intervening between these widely remote subjects, that, with regard to several of his later investigations, it is difficult to say whether they are most directly traceable to his primitive work on the one subject or on the other.

In 1837, on the death of Dr. Edward Turner, Mr. Graham was appointed Professor of Chemistry at University College, London, then called the University of London. On his acceptance of this appointment, he began the publication of his well-known 'Elements of Chemistry,' which appeared in parts, at irregular intervals, between 1837 and 1841. Elementary works, written for the use of students, have necessarily much in common; but the treatise of Mr. Graham, while giving an admirably digested account of the most important individual substances, was specially distinguished by the character of the introductory chapters, devoted to Chemical Physics; wherein was set forth one of the most original and masterly statements of the first principles of chemistry that has ever been placed before the English student. "The Theory of the Voltaic Circle" had formed the subject of a paper communicated by Mr. Graham to the British Association in 1839; and the account of the working of the battery, given in his 'Elements of Chemistry,' and based on the above paper, will long be regarded as a model of lucid scientific exposition.

In 1841 the now flourishing Chemical Society of London was founded; and though Mr. Graham had been, at that time, but four years in London, such was the estimation in which he was held by his brother chemists, that he was unanimously chosen as the first President of the Society. The year 1844 is noticeable in another way. Wollaston and Davy had been dead for some years. Faraday's attention had been diverted from chemistry to those other branches of experimental inquiry in which his highest distinctions were achieved; and, by the death of Dalton in this year, Mr. Graham was left as the acknowledged first of English chemists, as the not unworthy successor to the position of Black, Priestley, Cavendish, Wollaston, Davy, and Dalton.

From the period of his appointment at University College, in 1837, Mr. Graham's time was fully occupied in teaching, in writing, in advising on chemical manufactures, in investigating fiscal and other questions for the Government, and in the publication of various scientific memoirs, several of them possessing a high degree of interest; but it was not till 1846 that he produced a research of any considerable magnitude. In that year he presented to the Royal Society the first part of a paper "On the Motion of Gases," the second part of which he supplied in 1849. For this research Mr. Graham was awarded a second Royal Medal of the Society in 1850. The preliminary portion of the first part of the paper related to an experimental demonstration of the law of the effusion of gases, deduced from Toricelli's theorem on the efflux of liquids,—a demonstration that was achieved by Mr. Graham with much ingenuity, and without his encountering any formidable difficulty. But the greater portion of the first part, and whole of the second part, of this most laborious paper, were devoted to an investigation of the velocities of transpiration of different gases through capillary tubes; with a view to discover some general law by which their observed transpiration rates might be associated with one another. Again and again, with characteristic pertinacity, Mr. Graham returned to the investigation; but although much valuable information of an entirely novel character was acquired,—information having an important bearing on his subsequent work,—the problem itself remained, and yet remains unsolved. Why, for example, under an equal pressure, oxygen gas should pass through a capillary tube at a slower rate than any other gas, is a matter that still awaits interpretation.

Near the end of the same year, 1849, Mr. Graham communicated, also to the Royal Society, a second less laborious, but in the novelty and interest of its results more successful paper "On the Diffusion of Liquids." It was made the Bakerian lecture for 1850; and was supplemented by further observations communicated to the Society in 1850 and 1851. In his investigation of this subject, Mr. Graham applied to liquids the exact method of inquiry which he had applied to gases just twenty years before, in that earliest of his papers on the subject of gas-diffusion published in the 'Quarterly Journal of Science;' and he succeeded in placing the subject of liquid-diffusion on about the same footing as that to which he had raised the subject of gas-diffusion prior to the discovery of his numerical law.

In 1854 Mr. Graham communicated another paper to the Royal Society "On Osmotic Force," a subject intimately connected with that of his last previous communication. This paper was also made the Bakerian lecture for the year; but, altogether, the conclusions arrived at were hardly in proportion to the very great labour expended on the inquiry. In the next year, 1855, just five-and-twenty years after his appointment at the Andersonian University, Mr. Graham was made Master of the Mint; and, as a consequence, resigned his Professorship at University College. During the next five years he published no original work.

Thus, at the beginning of the year 1861, Mr. Graham, then fifty-six years of age, had produced, in addition to many less important communications, five principal memoirs, three of them in the highest degree successful; the other two less successful in proportion to the expenditure of time and labour on them, but, nevertheless, of great originality and value. The most brilliant period, however, of his scientific career was to come. In the year 1861, and between then and his death in 1869, Mr. Graham communicated four elaborate papers to the Royal Society; three of them far exceeding in novelty, interest, and philosophic power, anything that he had before produced; and the other of them, relating to a certain physical effect of that hydration of compounds, from the consideration of which his attention could never wholly be withdrawn. This least important paper, "On Liquid Transpiration in relation to Chemical Composition,' was communicated to the Royal Society in 1861. Of the three greater papers, that "On Liquid-Diffusion applied to Analysis" was communicated also in 1861. For this paper more especially, as well as for his Bakerian lectures "On the Diffusion of Liquids" and "On Osmotic Force," Mr. Graham received, in 1862, the Copley Medal of the Royal Society; and, in the same year, was also awarded the Jecker Prize of the Institute of France. Following in quick succession, his paper "On the Molecular Mobility of Gases" was presented to the Royal Society in 1863, and that "On the Absorption and Dialytic Separation of Gases by Colloid Septa," in 1866. With regard to these three great papers, two of them were each supplemented by a communication to the Chemical Society; while the third was supplemented by four successive notes to the Royal Society, containing an account of further discoveries on the same subject, hardly less remarkable than those recorded in the original paper. The last of these supplementary notes was communicated on June 10th, 1869, but a few months before the death, on September 13th, of the indefatigable but physically broken-down man.

In considering Mr. Graham as a chemical philosopher and lawgiver we find him characterized by a pertinacity of purpose peculiarly his own. Wanting the more striking qualities by which his immediate predecessors, Davy, Dalton, and Faraday, were severally distinguished, he displayed a positive zeal for tedious quantitative work, and a wonderful keen-sightedness in seizing the points which his innumerable determinations of various kinds, conducted almost incessantly for a period of forty years, successively unfolded. His work itself was essentially that of detail, original in conception, simple in execution, laborious by its quantity, and brilliant in the marvellous results to which it led. As regards its simplicity of execution, scarcely any investigator of recent times has been less a friend to the instrument-maker than Mr. Graham. While availing himself, with much advantage, of appliances devised by Bunsen, Poisseuille, Sprengel, and others, all the apparatus introduced by himself was of the simplest character, and for the most part of laboratory construction.

Essentially inductive in his mode of thought, Mr. Graham developed his leading ideas, one after another, directly from experiment, scarcely, if at all, from the prevailing ideas of the time. As well observed by Dr. Angus Smith, "he seemed to feel his way by his work." His records of work are usually, in a manner almost characteristic, preceded each by a statement of the interpretation or conclusion which he formed; but the records themselves are expressed in the most unbiassed matter-of-fact language. Singularly cautious in drawing his conclusions, he announces them from the first with boldness, making no attempt to convince, but leaving the reader to adopt them or not as he pleases. Accordingly, in giving an account of his various researches, Mr. Graham rarely, if ever, deals with argument; but he states succinctly the experiments he has made, the conclusions he has himself drawn, and not unfrequently the almost daring speculations and generalizations on which he has ventured. Some of these speculations on the constitution of matter are reproduced in his own words further on.

Mr. Graham was elected a Fellow of the Royal Society in 1837, Corresponding Member of the Institute of France in 1847, and Doctor of Civil Law of Oxford in 1855.

MISCELLANEA.

Action of Direct Sunlight upon Iodide of Potassium.—M. Loew.—A solution of iodide of potassium is, even when kept in well-closed bottles, slowly decomposed by the action of daylight, and assumes a somewhat yellowish tinge, due to free iodine. The author filled a number of glass tubes for about from one-half to three-fourths of their capacity, with a solution of iodide of potassium, and, after having sealed these tubes, exposed them to direct sunlight. Another set of tubes were likewise filled with the same solution, but all air was expelled, and the tubes sealed during and after the solution had been boiling for a considerable time. These tubes were also exposed to the action of direct sunlight; after three and four months' exposure, the tubes and contents were examined; those wherein no air at all was left were found to be perfectly colourless, no decomposition of the contents having taken place. As regards the other tubes, the following results are noticed:—(1.) Under the influence of light, the oxygen of the air decomposes iodide of potassium, iodine in small quantities is set free, while hydrate of potassa is found in the liquid. (2.) This decomposition is limited, and does not, even when a large quantity of oxygen is present, increase, because a portion of the iodine set free enters again into combination with the caustic potassa set free, forming iodide of potassium and iodate of potassa. (3.) The testing for ozone by means of a solution of iodide of potassium and starch (or paper prepared therewith) is of no value whatever, unless care has been taken to exclude direct sunlight.—*The Chemical News.*

Epsom Salts.—M. Lalieu (Bull. de Thérap.), for the purpose of disguising the bitterness of this salt, recommends the addition of a small quantity of coffee to be boiled in the solution of the salt for a few minutes.—*Med. Times and Gazette.*

Preservation of Drugs from Damp.—In the 'Bulletin de Thérapeutique' of October 16th, M. Stanislas Martin recommends the following method:—Small wooden or tin boxes full of quick-lime, and having their lid perforated with holes, are to be placed in every box or drawer containing drugs liable to be injured by damp. The air of these receptacles soon becomes dried, and when the lime has become hydrated, it must be replaced by new quick-lime. In the same way deliquescent salts may be preserved, as, for example, chloride of gold. The phial containing the salt is to be placed inside another of double its capacity, filling the space with lime, and corking hermetically.

A New Poison.—At a recent meeting of the California Academy of Sciences, Dr. Stout presented some specimens of an unknown umbelliferous plant, popularly known as "wild parsnip," which had been sent to him from Ruby Valley, Nevada, by Lieutenant Carpenter, of the United States Army. Three men had eaten some of the root; in about half an hour they were seized with vomiting, followed soon by convulsions and unconsciousness. Two of them, who had eaten each a whole root, died at the end of about an hour and a half; the other, who had taken a small portion only, recovered. The symptoms are described by Lieutenant Carpenter as resembling, with the exception of loss of consciousness, those of strychnia-poisoning; the hands were clenched, the face distorted, and the head thrown back almost under the back of the neck. The plant grows in marshy places, and smells and tastes like a parsnip.—*British Medical Journal.*

Removal of Nitrate of Silver Stains from Woven Tissues.—According to M. Grimm, chloride of copper completely removes, even from coloured woven cotton tissues, stains occasioned by nitrate of silver; the tissue is to be afterwards washed with a solution of hyposulphite of soda, and next thoroughly washed with water. From white cotton and linen tissues, nitrate of silver stains are more readily and effectually removed by applying dilute solution of permanganate of potassa and hydrochloric acid, followed by washing with hyposulphite of soda solution, and rinsing in plenty of fresh water. By these means the use of the highly poisonous cyanide of potassium is rendered unnecessary.—*Polyt. Notizblatt.*

Paraffin for Protecting Vessels in Crystallizing.—M. Franz Stolba, of Prague, suggests the use of paraffin as a coating to vessels of glass or porcelain when these are acted upon by certain liquids to be set aside for crystallization. The paraffin is put into the capsules, previously well dried and heated till it commences to boil; the vessels are then turned about so as to bring the paraffin in contact with the whole of the interior surface and then empty out the surplus. After cooling, it is found to hold well, and the vessels are ready for use. Of course the solutions to be crystallized must not be heated, but left to spontaneous or vacuum evaporation.—*Journ. de Chim. Méd., Août* 1868, *and Amer. Journ. Pharm.*

Utilization of Waste.—We learn from the 'Athenæum,' March 19, that an example of the utilization of waste has been afforded by a firm of photographers at Wakefield, who, for the last three years, have carefully collected their defective pictures, clippings, sweepings, washings, etc., burning the former, from time to time, to ashes, and precipitating the latter by common salt. To every pound of residue thus obtained, half a pound each of carbonate of potash and soda crystal in powder was added, and the whole fluxed. Two bars of pure silver, alloyed with a little gold, were thus obtained, weighing together 170 ounces troy, which have realized £44. 1s. 1d.

BOOKS RECEIVED.

LECTURE NOTES FOR CHEMICAL STUDENTS. By EDWARD FRANKLAND, F.R.S., etc., etc. Vol. I. Inorganic Chemistry. Second Edition. London: John Van Voorst, Paternoster Row. 1870.

HALF-YEARLY COMPENDIUM OF MEDICAL SCIENCE. Part V. January, 1870. Philadelphia: S. W. Butler, M.D. New York: Z. P. Hatch, Broadway. London: B. F. Stevens, Henrietta Street.

SILVERLOCK'S CHEMISTS' SALE OF POISONS REGISTER BOOK; in conformity with the "Sale of Poisons and Pharmacy Act Amendments," of July, 1868, and Amendment, 11th August, 1869. London: H. Silverlock, Blackfriars Road, and Earl Street, Doctors' Commons.

DIE PFLANZENSTOFFE IN CHEMISCHER, PHYSIOLOGISCHER, PHARMAKOLOGISCHER UND TOXIKOLOGISCHER HINSICHT. Berlin: Verlag von Julius Sprenger. 1870.

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the EDITOR, 17, *Bloomsbury Square, as early in the month as possible, and in no case later than the* 20*th of the month, if intended for publication in the next number.*

Several articles on scientific subjects, which had been prepared for this number, will be given with the Index in a Supplemental Number, to be issued on the 15*th of June.*

THE ANNIVERSARY MEETING.

Dear Sir,—A serious misunderstanding of the purport of my question to the President at the annual meeting on Wednesday, seems to have taken possession of the minds of a few representatives upon the Council, notwithstanding the distinct clearness with which I endeavoured to lay before the meeting the object of that question. I therefore crave your indulgence in allowing a short explanation, that the views then expressed by the meeting may not be misunderstood by the trade generally.

It was with no intention or desire to discuss the merits or demerits of the co-operative system of trading that I spoke on that occasion, feeling perhaps as strongly as any gentleman present, the undesirableness of having strictly trade subjects discussed at the meetings of our Society. We desire not to unite ourselves as members of this Society, for the purpose of raising or lowering prices; we do not desire the Pharmaceutical Society to issue its edicts upon such questions. More unanimity upon these matters may flow forth as the natural consequence of a more friendly and less antagonistic feeling among our brethren through its influence, but unhesitatingly the object of this Society is, and must be maintained, essentially educational.

The question I put to the President was, "Whether the firm which he represented did directly or indirectly supply the Civil Service or co-operative stores with drugs?" The object of that question being to direct the members in their votes for the election of the new Council.

Had Mr. Evans been a mere private member of the trade, no one could have challenged his right to conduct his business in any way he pleased; but when a gentleman steps out of the quiet routine of business into the arena of public life, and accepts a post in which he represents a large body of constituents, whose interests it then becomes his duty to protect,—I maintain it then becomes the privilege and the right of those who elect that gentleman to know clearly and distinctly whether their interests are protected by their representative.

It was on these grounds alone, I most emphatically assert, that my question was put, without in the least desiring to dictate to Mr. Sugden Evans, or any other person, in what way he was expected to conduct his own business.

Apologizing for troubling you at such length,

I am, Sir, faithfully yours,
EDWIN B. VIZER.
63, *Lupus Street, Belgravia South.*
May 20*th*, 1870.

THE PATENT MEDICINE STAMP.

Sir,—As much confusion exists in the minds of vendors of patent medicines, as to the necessity of attaching the patent medicine stamp on foreign medicines and proprietary goods; and as many of such articles are subject to stamp duty, but often sold by druggists without the necessary stamp, we think it right that your readers should know the result of our communication with the authorities at Somerset House, in order that vendors might not incur the penalty for infringing the Act.

In order to get an explicit opinion from the Solicitor of Inland Revenue, we forwarded to him samples of most of the proprietary medicines which we import, and we are informed that—"Foreign medicines of all kinds, except drugs, are chargeable with the medicine stamp duty, according to the Act 52nd George III. c. 150."

Some discrimination is necessary, as for instance, medicated papers, such as Fayard's, Albespeyre's, and others, although not in the category of medicines, yet being of *secret composition*, and published for the relief of ailments, are subject to the stamp duty. Capsules containing *pure drugs*, or preparations of pure carbon, such as Belloc's, or any packets or bottles containing *pure drugs*, and declared as such, are not subject to stamp duty.

The Solicitor to the Inland Revenue does not think that cigarettes are within the charge as medicines.

We think that publicity should be given to this matter, as we ourselves have been frequently in a dilemma how to act, when our friends have insisted that we ought to sell certain goods to them without the stamp. For the future there can be no difficulty, and *the trade are bound to stamp all secret medicines*, whether for *export* or *home consumption*, except they be sold in bond. Retail chemists and druggists would do well to see that all such goods supplied to them are properly stamped, or some day they may be mulcted in heavy penalties.

We are, Sir, yours obediently,
FRANCIS NEWBERY AND SON.
44 and 45, St. Paul's Churchyard,
London, E.C., May 24th, 1870.

HOMŒOPATHIC MEDICINES.

Sir,—I should be content to leave my previous remarks upon the traffic in homœopathic medicines by professed pharmaceutists without addition, if it were not that they have been somewhat misrepresented in the comments made upon them.

I judge it best to take no heed of observations which are either complimentary or uncomplimentary, further than to say, that I could not have intended to annoy gentlemen who are perfect strangers to me, and whose experience might teach them that if you want to attract attention to a topic, the worst possible way is to "put too fine a point upon it."

It is painful to know that the real cause of the traffic in homœopathy is to be found in the hardships under which pharmacy is often conducted, compelling some of our brethren to do that which must be inexpressibly painful to them, and which they must feel to be a degradation to themselves and to their calling. They re-echo the plaintive cry from Mantua, "Our poverty and not our will consents." An unaffected sympathy for the difficulties of their circumstances prevents me from more than hinting at them. "Ne sit perpetuum" is the object of pharmaceutical association; it is my object in exploring this cancerous infection.

Returning to our subject, I must be allowed to say that the justifications pleaded for those who take homœopathy under the wing of pharmacy (other than that of stern necessity, against which no arguments avail) do not apply. I must recall your attention to the position advanced in my former letter. It was that the sale of homœopathic medicines by those who *believe* them to be shams (whether they be so or not) is incompatible with pretensions to professional status. I did not represent it as a breach of trade honesty, nor was the communication expected to interest those who acknowledge no higher obligations.

The assumed parallel of bread pills has no existence, so far as I know. During thirty years' experience in pharmacy, I have never known bread-pills prescribed, nor have I heard that any individual or school of medical practitioners has used them for the treatment of disease. If it were so, it would be a parallel imposture with homœopathy, to be dealt with in the same manner. I have heard vaguely of inert pills, bread or some other inoperative ingredient, being prescribed to cheat the perversity of hypochondriac patients bent upon taking pills calculated to do them injury. And I call upon the Editor to say if he meant anything more than this, when he referred to the administration of bread pills; and if not, whether he thinks it was ingenuous to introduce such an illustration into the discussion.

Mr. Marshall's letter is not more to the purpose. He kindly assumes that I sell Morrison's pills, and founds the major portion of his argument upon the assumption. I respectfully assure him that I consider Morrison's pills an exaggerated instance of quackery, and take no credit for not dealing in them. As for Parr's pills, "et hoc genus omne," I am constrained to admit (*pace* the high and dry school of optimists) that I have a considerable respect for patent medicines, which I believe to be so great a public convenience as to be almost a public necessity; and I am not at all disposed to join a Quixotic crusade against them. They are, at all events, based upon rational principles of therapeutics, such as pharmacy acknowledges. If it is any satisfaction to Mr. Marshall, I also confess to selling *what some people call* "homœopathic" solution of camphor, which is fully four times the strength of the official preparation, and I further acknowledge that I believe it to be one of the best allopathic prophylactics against, or remedies for colds.

Mr. Marshall challenges me to predict the duration of homœopathy, and I willingly accept his call; stipulating, however, that he and the other pharmaceutists shall give it a clear field and no favour. According to my observation, homœopathy, as a form of medical practice, is already extinct; it lingers in the credulity of the public, and the interestedness of the shops who supply them; but *if left alone*, I sincerely believe that the present generation will outlive it. The observation upon which this apparently sanguine expectation is founded, is first, that homœopathy is arrant folly, opposed to scientific investigation and to common sense, which perhaps may not go for much; but secondly, that, so far as I can ascertain, homœopathic practitioners do not *now* trust to homœopathic doses, in which alone their real divergence from rational practice consists. They do not themselves use those absurd globules which contain no trace of the ingredients inscribed upon their imaginative labels, but rely upon saturated tinctures of aconite, belladonna, nux vomica, and other deadly agents, which timid pharmacists isolate in poison-closets, and hedge about with ponderous precautions. *We* know how easily homœopathic doses may be simulated in the eyes of the uninitiated, while potential quantities of these energetic poisons are actually administered. Say, for example, *one drop* of liquor belladonnæ.

It is true, that homœopathic patients are encouraged to treat their minor or imaginative maladies, which need no medicine, with globules at discretion. Herein is homœopathy triumphant. "Similia similibus," nothing is cured by nought! And probably no better scheme could be devised for amusing what they call their minds, while the "vis medicatrix naturæ" effects the cure.

Such a delusion as this cannot endure, and the time must soon come when the farce of homœopathy, already played out, will be stripped of its mark, and stand confessed in undisguised imposture. Its quondam votaries will smile at their past credulity, and own that, like the Athenians of old, they have been "too much given to superstition."

It will be a sorry reflection for us if the disloyalty of pharmacy to scientific truth contributes to postpone that coming dawn.

Your obedient servant,

RICHARD W. GILES.

Clifton, May, 1870.

Sir,—Have not your correspondents missed a most important consideration in discussing the propriety of supplying these medicines, namely, that the public demand them, and properly qualified medical men recommend them? Are chemists to be censors of medical treatment, and deny this, or supply that medicinal agent, according to their personal faith in its action? A physician, for reasons best known to himself, may prescribe six grains of sand. Is it not the duty of the dispenser to supply it? His veto is surely in no case valid, unless to prevent injury. If chemists desire to show their title to a professional status, such a purpose will not be hindered by a gentlemanly tolerance of diverse opinion.

I am, Sir, your obedient servant,

T. M.

DISPENSING BY MEDICAL MEN.

Dear Sir,—In the present improving and promising age of pharmacy, when not only masters, assistants, and apprentices, but even the Government itself, see the advantage of a well-educated and duly qualified class to dispense the prescriptions of our medical men, allow me to call your attention to the fact, that about 90 per cent. of our doctors prepare their own medicines; and to what purpose do we read and study to pass our examinations, devoting time, trouble, and expense, to qualify ourselves for the duties of a dispenser, if, on attaining our position as chemists, we have no prescriptions to prepare, but depend upon our means of subsistence from the sale of grocery and fancy articles, for how very few of the country chemists could obtain a mere existence by dispensing? I speak of the smaller fry, not the chemists at fashionable watering places. I quote, as an example, the chemists (of whom there were two) in a small town in which I occupied a situation; the population was between three and four thousand; there were four medical men, all dispensing their own medicines. What was the consequence? The chemists became grocers, seed-merchants, oil and paint dealers; and then that you receive letters complaining of grocers selling drugs can't be wondered at. Is it not the pot calling the kettle black, for chemists who sell tea and biscuits to complain of grocers who sell epsom salts and cream of tartar? In my present situation, in a town of the same size in France, there are four doctors and two chemists; we have between forty and fifty prescriptions a week, and double that number in the season; are consequently satisfied, and do not dabble in teas, biscuits, seeds, paints, oils, and the thousand-and-one articles you find in a country chemist's shop. If the French doctors are not permitted, and can live without dispensing their own medicines, why should not the English chemist possess the same advantages and privileges of his compeers in France? for his examinations are more difficult, and his expenses in learning his trade much heavier. Hoping this may find space in your valuable Journal,

Believe me to be, yours sincerely,
T. Mills, A.P.S.

Biarritz, May 11*th*, 1870.

Early Closing.

Sir,—Many of the wholesale drug houses having adopted the system of taking half an hour for dinner, and leaving business at six instead of seven o'clock, will you kindly allow me, through your columns, to appeal to those employers who adhere to the old hours to try the new?

As all are familiar with most of the arguments that can be urged, both for and against the change, no special pleading is needed on the matter; yet there is one argument in its favour which hitherto has not been used, because of its non-existence till recently. This is, that in those houses in which the curtailed hours have been adopted, it has been found that the work has been done quite as satisfactorily, and in some instances even more satisfactorily than before.

Perhaps a meeting of the wholesale assistants might be a means of furthering the matter, and of bringing it under the notice of employers.

Yours, etc.

London, May 20*th*, 1870. Spes.

Carbolate of Iodine.

Sir,—A communication on carbolate of iodine (colourless tincture of iodine), written by me, and published in the April number of the Pharmaceutical Journal, elicited a reply, which appeared in the number for May. It is unnecessary to enter into further controversy on the subject, as the fact that ammonia *will decolorise* tincture of iodine is beyond doubt. I therefore do not fear to leave to the judgment of the profession whether the imputations of "ignorance and incompetency" are justified, or not.

Yours, etc.
Walter G. Smith.

Dublin, May, 1870.

"*A Pharmaceutical Student.*"—In all cases the wires are isolated, and therefore would not be affected in the way indicated.

"*Inquirer*" (Bakewell).—A copy of the Regulations of the Board of Examiners will be forwarded on application, by letter, to the Secretary, 17, Bloomsbury Square.

"*Inquirer*" (Tarporley) wishes for information as to "a powder being used for the instant relief of intoxication."

P. H. M. (Norwich).—(2) A knowledge of either is accepted, but a knowledge of both is considered desirable. For information on the other points apply, by letter, to the Secretary, 17, Bloomsbury Square.

B. K.—The green solution is a manganate, the red a permanganate.

"*Southend.*"—We know of no very simple means of ascertaining the presence of alum in bread; see the December number of the Pharmaceutical Journal, page 363.

"*Cinnabar of Antimony.*"—Mr. G. Brown (Sandown, I. W.) in reply to Mr. Cocking's letter, observes that he was fully aware that red sulphuret of mercury was the cinnabar of antimony of the alchemists, and that this was the preparation alluded to in 'Gray's Supplement,' 'Cooley's Cyclopædia,' and 'Beasley's Druggists' Receipt Book,' and was so called from its mode of preparation: he thinks this is not intended by the most eminent veterinary authorities, but a red ore of antimony known to mineralogists, and consisting of antimony in combination with oxygen and sulphur, and that the oxysulphuret of antimony of pharmacy approaches it very nearly, and may be safely used for it.

G. G.—*Glycerine jelly*, see the British Pharmacopœia, also Mr. Schacht's paper in this Journal, Vol. XVII. p. 400.

A. P. S.—The article called "Brilliantine" is sometimes made with spirit of wine and almond oil, in equal proportions.

T. S. wishes to know what is meant by "*Date's Ointment.*"

"*Nunquam Dormio.*"—The Medical Bill, now before the House, will not interfere with the legitimate calling of chemists and druggists.

Instructions from Members and Associates respecting the transmission of the Journal should be sent to Elias Bremridge, Secretary, 17, Bloomsbury Square, W.C., before the 25th of the month.

Advertisements (not later than the 23rd) to Messrs. Churchill, New Burlington Street, London, W.

THE PHARMACEUTICAL JOURNAL.

SECOND SERIES.

VOL. XI.—No. XIII.—JUNE 15, 1870.

NEW SERIES OF THE PHARMACEUTICAL JOURNAL.

A new series of this Journal will be commenced next month, when it will appear in a new form, and as a weekly publication. Originally established by Jacob Bell as an organ of communication especially devoted to the interests of the Pharmaceutical Society, which was founded at the same time, it has hitherto appeared at intervals of a month throughout the last twenty-nine years, forming in that period two series.

The commencement of the second series, in 1859, was marked by two important events,—the death of the former editor and proprietor of the work, who was also the founder and great benefactor of the Pharmaceutical Society, and the transference by him of the property in this Journal to the Society in whose interest it had ever been conducted, and for whose benefit it was then freely assigned as a munificent gift.

The commencement of the third series will also be marked by important changes, especially in the size and general appearance of the Journal, and the frequency of its publication. It will consist of twenty pages of a much larger size than heretofore, will be printed with new type, and issued weekly. It will thus afford the means of conveying a greatly increased quantity as well as a greater variety of matter, in providing which many new contributors will be engaged. The first number of the new series will appear on the 2nd of July.

AN AGE OF PROGRESS.

The recent election of our Council may, we fear, tend to detract from that estimation of the wisdom of our provincial friends with which they have been usually credited. The details respecting this particular institution seem to be imperfectly understood, and we offer therefore some explanations.

"Council" is not a translated word, but an abbreviated, adapted anglicism for *consilium*. An assembly of persons met together in consultation, or to give advice. It is not a discussion hall, nor a spot where the art of elocution may be cultivated. It is not a vestry, nor a Young Man's Mutual Improvement Association. Our own Council aims at working out, and protecting the interests of the Pharmaceutical Society, which are grave; and it is independent of trick sensationalism influenced or suggested by the outer world.

Most of its conclusions are arrived at by conversational means—a serious talk—desultory for Journal purposes, and useless for publication, but thoroughly effectual as regards result. Sometimes, it is true, a storm passes over its otherwise tranquil waters; then conversation flags, and speech sets in, but this is of so rare occurrence that the anomaly does not characterize the Board.

May we hazard an explanation respecting something apparently not known? Three quarters of Council work is arranged beforehand either in Committee or in private. The Council is to a large extent the reflection and confirmation of its Committees, and any Member airing his opinions at the Board, without preparation or previous thought, guided only by the instinct of the moment soon discovers his mistake. Look at the Statement of Attendance of Members of Council on Committees for the Year 1869–70, and try to understand its meaning. An excellent Pharmacist who will welcome the British Pharmaceutical Conference this Autumn, has assisted at one Committee. Another whose happiness it is to live within view of France, has never attended on one solitary occasion. A gentleman whom we all hold in honour, in spite of his dredging for Foraminiferæ, has appeared exactly twice. Then come representatives from Clapham, Birmingham, Southampton, Brighton, and Bristol, nil. Are they to blame? These are amongst the utterly best men of our Society, but they are geographically unable to be present. For which reason, except on rare occasions they are not even asked to serve. Being mortal they are bound by the iron facts contained in Bradshaw's Guide.

On the other hand, we have a gentleman at Belgravia who has attended not less than 46 times; another, whose activity is only equalled by his executive skill, 21 times, and his services are, by a wise regulation, transferred to Examination Duties. Take the list of other London members, and you have 26, 47, 25, 15, 17, and 44 appearances.

But the Provinces, who are omniscient mean to put all things right—they forget that an easy walking distance or omnibus ride to and from Bloomsbury Square is essential to the management of the ordinary business of the Society. So we get these returns of votes lately published. One, whose diligence has been matter of remark and who not only has attended but worked at 44 Committees is rejected—but there is this consolation, that the Provinces influenced perhaps by circulars, have passed by the representative of one of the first establishments in London, in favour of others, capable no doubt, but unable, owing to the exigencies of transit, to aid routine work. We deliberately state that the election of such a large proportion of country members is a mistake.

The Country cannot transact home London business.

May we venture on a further expression of regret when we notice the absence of many names long held in reverence? These are not simply old men but Founders of the Society, a fact some of our more ardent spirits totally ignore.

It seems hard that no sooner does the silver mingle with a man's hair than he is termed an obstructive. Under certain circumstances we should imagine that to obstruct would be a work of christian charity. Old age has too little initiative endeavour—Youth lacks experience. The truth is that neither can do without the other. It is our plain duty to recognise and praise most cordially the labours of the past, nor do we object to become the Laudator temporis acti. We have new blood which it appears was desired; time will determine its character. We hope, and our earnest wish is, that the New Council may be as industrious and successful in promoting Pharmacy as their predecessors. Our impression is that the direction of affairs will be too much left in the hands of a few metropolitan members.

A NEW SORT OF CO-OPERATIVE TRADING.

It is not with any intention of renewing or extending discussions such as we have recently had occasion to report, or with a desire to create unnecessary alarm, that we bring under the notice of our readers a proposition which has been recently advertised, and appears to be extensively and powerfully patronized, for the establishment of a new sort of co-operative trading,—if, indeed, that can be called trading which relates to professional work. The co-operative stores were founded for the purpose of supplying goods—food, and clothing, and the necessaries of life—to those who subscribe to a common fund, at prices less than they can be purchased at elsewhere; and this is done ostensibly for the benefit of persons of small means, whose incomes are inadequate to the conventional requirements of the society in which they mix. Practically, however, it has been found that the advantages afforded by the co-operative stores are not confined to the class of persons for whom they were originally designed, but that rich and poor alike partake of them. The long established institutions of commerce are thus disturbed, dissatisfaction is created where there are no just grounds for it, suspicions are raised of impositions which do not exist, and confidence is shaken in the fair dealing and honest integrity of industrious tradesmen whose very means of support are thus imperilled; while at the same time a resort to deception is promoted for the purpose of counteracting the injurious influences of such interference with the legitimate occupations of trade. The system has not hitherto been applied to professional work, but professional men are among the number of those who avail themselves of the co-operative system for obtaining such goods as they require, and can they wonder if sooner or later the system should be found to affect them in another way? If clergymen and lawyers, magistrates and doctors, as well as Government officers, disregarding the recognized laws of trade, deprive the retail tradesman of his fair and legitimate profit by adopting a cunningly devised expedient for getting goods at wholesale prices, they must expect as the natural result of such proceedings that the system they have adopted shall react upon themselves, and that honest and hardworking but unremunerated tradesmen will, in their turn, adopt a co-operative system for getting their professional and civil-service work done at the cheapest possible rate. It appears that a movement is now being made in this direction, as the following advertisement, copied from the 'Times' of June 4th, will show:—

METROPOLITAN MUTUAL MEDICAL AID SOCIETY, for Securing Professional Medical or Surgical Attendance, and to supply all Medicines to Subscribers.

Under the Patronage of
The Right Hon. the Lord Mayor,
The Right Hon. James Stansfeld, M.P.,
The Hon. Sir James Hannen, Court of Queen's Bench,
The Hon. James Bacon, Chief Judge in Bankruptcy,
Sir William Henry Bodkin, Assistant-Judge, Middlesex.

Committee.

Sir Thos. Duffus Hardy, 35, North Bank, Regent's Park.
W. H. Ashurst, Esq., Solicitor to General Post-Office.
Robert Barrow, Esq., Blackheath Park.
Charles Bischoff, Esq., Inner Park Road, Wimbledon.
James Bischoff, Esq., 73, Kensington Gardens Square.
Alfred Borwick, Esq., Higham Hill, Walthamstow.
Edward Bromley, Esq., 43, Bedford Row, W.C.
J. R. Brougham, Esq , 36, Leinster Square.
Edward Frederick Burton, Esq., 25, Chancery Lane, E.C.
William Coulson, Esq., Consulting Surgeon to St. Mary's Hospital.

Dr. George Harcourt, 21, Stafford Terrace, Phillimore Gardens, Kensington.
William Hazlitt, Esq., Court of Bankruptcy.
George Lawford, Esq., Clapham Common.
M. E. Marsden, Esq., 42, Doughty Street, Mecklenburgh Square.
Dr. Charles Mayo, Physician to the Royal General Dispensary.
Dr. E. H. Sieveking, Physician to St. Mary's Hospital.
Alfred Smee, Esq., F.R.S., F.R.C.S., Senior Surgeon, Royal General Dispensary, and Surgeon to the Bank of England.
H. H. Stansfeld, Esq., 40, Talbot Road, Bayswater.
H. R. Twining, Esq., Heathfield, Streatham.
A. S. Twyford, Esq., Trotton House, Wimbledon.

Bankers—Messrs. Barnetts, Hoares, and Co., 60, Lombard Street.
Secretary—Herbert Stoddart, Esq.
Temporary Offices—75, Old Broad Street, E.C.

This Society is formed to enable persons of limited income, by payment of a small annual sum, to secure themselves efficient medical aid in case of illness.

To those whose means are only equal to the ordinary requirements of life, but are unprepared to meet the expenses connected with sickness, the above arrangement will sufficiently commend itself; while the fact of the district medical officers being selected from among fully qualified practitioners, and the strict limitation of expenses, will, no doubt, be guarantees highly appreciated. Many are now forced into the hands of unqualified men or druggists, whose profits depend upon the sale of medicine, and who have never received a medical education.

In critical cases references to consulting physicians or surgeons will be secured, without additional cost to the subscriber.

It is proposed to appoint sub-committees for the several districts, to assist generally in the working of the Society.

The district medical officers will be appointed by the General Committee, under the advice of its medical members.

It is not intended that persons who may be possessed of sufficient income to pay ordinary medical charges, or may be suffering from any chronic or inveterate disorder, shall participate in the advantages of this Society. The sub-committees will be instructed to prevent any such abuse.

Rates of Subscription.

	£	s.	d.
Single subscription	£0	10	6
Families not exceeding four persons ...	1	1	0
" " six " ...	1	11	6
" exceeding six persons	2	2	0
Registration	0	1	0

The subscription does not include accouchements, but the Society's medical officers will attend, if desired, for a moderate fee.

FALSE WEIGHTS AND ADULTERATIONS.

If the statements made in Parliament on the above subjects could be received as a fair representation of facts, it would be difficult to account for the tardy progress made in legislating on the subject. Bill after Bill has been introduced for the purpose of protecting the public against the adulteration of food and drugs, and other fraudulent practices which are said to prevail among the trading community. Charges of a serious character have been preferred, with the view of justifying the proposed measures, but all attempts to remedy existing evils have hitherto proved abortive, and the last of the adulteration Bills has been withdrawn, with no immediate prospect of further result.

What does this apparent indifference of the Legislature to the appeals thus made to them mean? Is Parliament insensible to the importance of providing a remedy for evils such as have been described, or is it incredulous of the existence of those evils? If the case were believed to be half as bad as it is represented, there would be no excuse for further delay in providing adequate punishment for offences which admit of no justification.

Looking at the startling nature of the statements made, on the one hand, and the cool and temperate manner in which, on the other hand, they were met by the Secretary of State in a recent debate on the subject, it is obvious that, although not directly contradicted, the exciting announcements of Mr. Muntz and others are by no means fully credited. Had it been otherwise, a serious inquiry into the nature of the evidence by which such accusations are attempted to be justified, would become the duty of those who are qualified for such investigation.

Mr. Muntz said, "With regard to adulteration, it was a far more serious question than many hon. members might suppose. It was not a question of cheating merely, but a question of life and death. He stated on a former occasion on bringing in a Bill on the subject, that two-thirds of the people were robbed, and one-third poisoned. He understated the case: they were all robbed, and two-thirds were poisoned. He did not mean to say that they all died, but articles were sold to them which tended very much to injure their health. And the poor could not help themselves. They were mostly in debt, and dare not leave the shop of the man to whom they were indebted. An examination was lately made of articles purchased at shops in London. Taking the article of coffee, that purchased at the West-End shops was pure, but out of twenty-seven shops at the East-End, twenty-three of the samples contained 25 per cent. of chicory, 25 per cent. of beans, 25 per cent. of crust of bread, and 25 per cent. of brick dust. The French medical men said this mixture would produce gastric fever. Then take the article of drugs. When he was a young man a traveller from a wholesale druggist called upon him, and he asked what discount was allowed. 'Oh,' said the traveller, 'for the London market net, for the country market 25 per cent., and for export 50 per cent.' The purity of the article was according to the price, so that a person in a colony would have to take twice the dose that a person living in London would have to take to produce the same effect. A friend of his made an analysis of blue pills. They came into fashion with Abernethy. And what did the House think his friend found these blue pills were composed of? Why, slate filings and blue clay. With respect to beer, he would mention one fact which was conclusive. The magistrates of Shropshire were struck some time ago with the great increase in the cases of drunkenness, and, on the motion of Sir Baldwin Leighton, appointed a committee to inquire into its cause, and that committee reported that the great mass of persons who were brought up and fined for drunkenness and assaults were reduced to that state, not from the quantity of beer they drank, but from the effect of the nauseous poison with which it was adulterated, and that it was the sellers of the noxious article who most richly deserved punishment. No doubt there was some of the 42 tons of the coculus indicus which had been referred to by the noble lord in that beer. It was well known that verdigris was used to colour pickles, and therefore he would not occupy the time of the House by referring to any particular cases; but with respect to wine, it was noteworthy that in a sample of port submitted to analysis it was found to be composed of 45 gallons of rough cider, 6 of brandy, and tincture of logwood sufficient to colour it, and 3 gallons of a decoction of sloes. That was a pretty specimen of port wine. In the case of bread, a baker at Cardiff some time ago was fined £5 for selling it adulterated, not with alum, but plaster of Paris."

Mr. Bruce said, "No doubt there did exist a considerable evil, but what was deficient in quality was often compensated for by less cost, and supposing milk was supplied more pure the price would be in proportion to the purity. At the same time he did not in any way defend adulteration, but on the contrary looked upon it as a grave offence, and one which neither morally nor legally could be separated from the offence of obtaining money under false pretences. The law was inadequate, he admitted, and the cause was probably to be found in the permissive nature of the present legislation. Such appeared to have been the persuasion of the member for Birmingham (Mr. Muntz), for it was part of his plan that every county and borough in the country should be compelled to employ an analyst, and he did not know how the evil was to be effectually met except by provision of some person whose duty it would be to detect offences or to examine into any complaint that might be made. If that measure had been pressed it would have received careful consideration, and he did not think the Government was open to the charge of casting impediments in the way of legislation by private members. A very large proportion of the time of the House was in the hands of private members, and these questions could be well dealt with by them. He admitted the evil, and was not prepared, like the noble lord, to state what remedy should be applied. With regard to false weights and measures, he would undertake that the Government should deal with it next session, and he would give the other part of the subject his consideration."

Mr. Bruce's remarks, although not offered in reply, for they were made before Mr. Muntz spoke, present a marked contrast to those of other speakers, and afford satisfactory assurance that while Ministers are sensible of the existence of a great evil, and of the necessity for some further legislation in reference to it, they are not prepared to base such legislation on the highly-coloured and exaggerated representations which have been made on this subject, both in and out of Parliament.

APPOINTMENT OF LOCAL SECRETARIES.

In one of our recent numbers we remarked on the importance of the appointment of Local Secretaries, and endeavoured to draw the attention of members of the Society to the duty they were asked to perform in their respective districts, of recommending to the Council fit and proper persons to fill these offices. If such recommendations were sent by the members from every district in which there is a Local Secretary, it would greatly assist the Council in making a judicious selection; but we are sorry to find that, notwithstanding our reminder, no return whatever was made with the voting-papers last month, from about one-third of the whole number of districts entitled to the appointment of Local Secretaries.

TRANSACTIONS

OF

THE PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL, *June 1st*, 1870,

Present—Messrs. Abraham, Atherton, Bottle, Bourdas, Brady, Brown, Deane, Dymond, Edwards, Evans, Groves, Haselden, Hills, Reynolds, Sandford, Savage, Stoddart, Sutton, and Woolley.

Mr. Henry Sugden Evans was called to the chair, and took the same accordingly.

The minutes of Council on the 4th and 18th ultimo were read and confirmed.*

This being the first meeting of the Council after the Anniversary, the election of Officers for the ensuing year was proceeded with by ballot.

ELECTION OF PRESIDENT.

Ballot 1.—	Sandford	5
	Evans	4
	Hills	4
	Haselden	3

Mr. Sandford begged to be excused from accepting the honour of the Presidency, in consequence of feeling unable to devote the necessary time to its duties.

Mr. Evans also expressed his inability to resume the office; whereupon a second ballot was taken, with the following result:—

Ballot 2.—	Sandford	6
	Hills	6
	Haselden	3
	Bourdas	1

Mr. Sandford and Mr. Hills being equal, a third ballot became necessary.

Ballot 3.—	Sandford	10
	Hills	6

Mr. Sandford was therefore declared President, and took his seat accordingly.

VICE-PRESIDENT.

The Ballot was then taken for the election of Vice-President, with the following result:

Haselden	9
Hills	2
Savage	2
Bourdas	1
Brady	1
Reynolds	1

Mr. Haselden was then declared Vice-President for the ensuing year.

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* In reference to the minutes of the meeting of Council on the 18th May, prior to the Annual General Meeting, it was

Ordered—That the following proceedings at that meeting should be recorded and published in the next number of the Society's Journal and Transactions.

"The subject of the proposed regulations for the keeping and sale of poisons having been brought under consideration, it was

"Moved by Mr. Abraham, seconded by Mr. Mackay—

"That, considering the memorials which have been presented against the proposed regulations, and the difficulties which are alleged to exist against their universal use, this Council, whilst still believing that the regulations in question are good, and that the objections against them are not well founded, nevertheless recommend that, for the present, their adoption shall not be compulsory, and that their further consideration be deferred for a year."

"Moved by Mr. Edwards, seconded by Mr. Ince—
"That this Council pass on to the Annual Meeting.

"Mr. Edwards's motion having been put, the following voted:—

"*For*—Messrs. Bottle, Bourdas, Carteighe, Deane, Edwards, Haselden, Hills, Ince, Morson, Sandford, Stoddart, and Williams.

"*Against*—Messrs. Abraham, Brady, Mackay, Randall, and Savage.

"The Chairman declared the motion carried, and the Council passed on accordingly."

Thomas Hyde Hills was unanimously elected Treasurer.

Elias Bremridge was elected Secretary and Registrar.

Richard Bremridge was elected Assistant-Secretary and Deputy-Registrar.

The following Committees were appointed:—

General—The whole of Council.

Finance—Messrs. Abraham, Bottle, Bourdas, Dymond, Evans, Hanbury, and Stoddart.

Library, Museum, and Laboratory—Messrs. Abraham, Bourdas, Brady, Edwards, Groves, Hills, Mackay, Reynolds, Sutton, and Woolley.

House—Messrs. Bourdas, Deane, Edwards, Hanbury, and Hills.

Benevolent Fund—Messrs. Abraham, Bottle, Bourdas, Dymond, Evans, Hanbury, and Stoddart.

Parliamentary—Messrs. Abraham, Atherton, Bourdas, Brown, Edwards, Evans, Hills, Hanbury, Mackay, and Savage, with power to add to their number.

Publication of Council Minutes—The President, Vice-President, and Mr. Edwards.

Moved by Mr. Brown, seconded by Mr. Deane, and—

Resolved—That the attendances on Committees for the past year be reported in the ensuing number of the Journal, and that in future such attendances be published annually.

On the motion of Mr. Brady, seconded by Mr. Dymond,—

That a ballot be taken for the appointment of Examiners for the ensuing year.

The following twelve Pharmaceutical Chemists were elected and appointed for England and Wales, for the ensuing year, subject to the approval of the Privy Council:—

Allchin, Alfred	London.
Bird, Augustus	London.
Carteighe, Michael	London.
Cracknell, Charles	London.
Davenport, John T.	London.
Deane, Henry	Clapham.
Edwards, George	Dartford.
Gale, Samuel	London.
Garle, John	Bickley, Kent.
Hanbury, Daniel	London.
Ince, Joseph	London.
Southall, William	Birmingham.

The following six Pharmaceutical Chemists were appointed Examiners for Scotland for the ensuing year, subject to the approval of the Privy Council:—

Ainslie, William	Edinburgh.
Aitken, William	Edinburgh.
Brown, David Rennie	Edinburgh.
Buchanan, James	Edinburgh.
Kemp, David	Portobello.
Young, James Robert	Edinburgh.

The President and Vice-President are on all Committees *ex officio*, and on the respective Boards of Examiners in London and Edinburgh.

The Report of (Messrs. Evans, Haselden, and Bourdas, who acted as) the Finance and House Committee in auditing the accounts for the past month was presented, showing on the General Fund account a balance in the Treasurer's hands of £2219. 12*s*. 5*d*., and submitting for payment accounts amounting to £864. 18*s*. 5*d*.: and on the Benevolent Fund account a balance of £449. 19*s*. 1*d*.

Resolved—That the Report be received and adopted, and payments made.

Resolved—That the Finance Committee be requested to take into consideration the Funded Capital of the Society, with a view to its more advantageous investment, and that they be requested to report to the Council thereon.

Resolved—That the Reports of the Library, Museum, and Laboratory Committees of the 11th and 17th ult. be received and adopted.

Resolved—That free Laboratory instruction be given to the Jacob Bell Scholars for the Session 1870–71.

Moved by Mr. Deane, seconded by Mr. Brady, and—

Resolved—That Mr. G. F. Schacht be requested by the Council to deliver the Introductory Address to the Students at the formal opening of the Session in October next.

Resolved—That the Reports of the Conversazione Committees of the 11th and 17th ult. be received and adopted.

Resolved—That the best thanks of this Council are due, and are hereby offered, to their Lordships the Committee of Council on Education for the use of the South Kensington Museum on the 18th May for the purpose of holding the Society's Conversazione.

Resolved—That the Secretary be requested to convey to the Official Staff of the South Kensington Museum the best thanks of this Council for the prompt and energetic manner in which the whole of the arrangements for the Society's Conversazione on the 18th ult. were carried out.

Resolved—That it is expedient to elect two Annuitants on the Benevolent Fund in October next, and that the Secretary be requested to announce in the usual channels the intention of the Society so to do.

The Secretary reported that from nearly one-third of the places to which nomination papers for Local Secretaries had been sent no return had been made; whereupon it was

Moved by Mr. Hills, seconded by Mr. Deane, and

Resolved—That the Report of the Scrutineers in reference to the Nominations of Local Secretaries for the ensuing year be referred to the Parliamentary Committee for consideration, and that the Committee be also authorized and empowered to arrange for the Nomination of Local Secretaries in those districts from which no return has been made, and report to the Council at their next meeting.

RESIGNATION OF MR. W. DICKINSON.

The Special Report of the Scrutineers was read, and the following resolution, passed at the adjourned Annual General Meeting, held on the 24th of May, was taken into consideration:—

> "That the Council be requested to take the Special Report of the Scrutineers into their earliest consideration, with a view to erasing the name of Mr. William Dickinson from the Register of Members."

The Secretary presented the following letter which he had received from Mr. Dickinson, accompanied by his Certificate of Membership:—

"*London, May 25th*, 1870.

"*To the Secretary of the Pharmaceutical Society of Great Britain.*

"Sir,—I beg leave to tender my resignation as a Member of the Pharmaceutical Society of Great Britain.

"I am, Sir, your obedient servant,

"Wm. Dickinson."

Resolved—That inasmuch as the resignation of Mr. William Dickinson relieves the Council from the unpleasant duty of expelling him from the Pharmaceutical Society, his resignation, now tendered, be accepted, and that his name be erased accordingly from the list of Members.

Resolved—That the Treasurer be requested to pay to each of the Scrutineers who attended the second scrutiny on the 23rd ult., the sum of Two Guineas, for his services on that day.

JOURNAL.

Moved by Mr. Brady, seconded by Mr. Dymond,—

That in view of the impending change in the mode of conducting the Pharmaceutical Journal, and in order to introduce the New Series under conditions the most favourable for commanding literary and financial success, the Secretary be instructed to insert advertisements forthwith in the 'Times,' 'Athenæum,' Chemical News,' 'Scientific Opinion,' and 'Nature,' inviting applications from gentlemen capable of undertaking the duties of Editor and Sub-editor respectively. All applications to be forwarded to the Secretary on or before the 18th June.

Amendment—Moved by Mr. Groves, seconded by Mr. Abraham,

That the question of advertising for applications to fill the post of Editor be postponed for six months from this date.

On a division taking place, Mr. Savage demanded that the voting should be by ballot.

Ballot—*For* the Amendment, 9. *Against*, 10.

The Amendment was therefore lost.

The original Motion was then put, and the voting was again taken by ballot.

Ballot—*For* the Motion, 13. *Against*, 5.

The Motion was therefore carried.

Moved by Mr. Brady, seconded by Mr. Dymond, and

Resolved—That a Special Committee be appointed to arrange for the due publication of the Journal until the Editor of the New Series enters on his duties, and to meet on the 21st June to select from such applications as may have been made for the Editorship and Sub-editorship, a limited number for the consideration of the Council.

Resolved—That the following gentlemen constitute the Special Journal Committee:—The President and Vice-President; Messrs. Dymond, Edwards, Mackay, Reynolds.

Moved by Mr. Dymond, seconded by Mr. Stoddart,

That it is desirable on the commencement of the New Series of the Pharmaceutical Journal that the proceedings of this Council be more fully reported in that and other Journals, and that, under regulations, Reporters be admitted to the meetings of the Council.

Amendment—Moved by Mr. Abraham, seconded by Mr. Edwards,

That this Council is of opinion that no periodical publication would afford space for the publication of the speeches and proceedings which occur at its meetings; that the adoption of the Motion would lead to partial reports, which would not afford the information desired; that the presence of Reporters would lead to the suppression of inquiries and discussions which are now common, with the result that such matter would be left to Committees, in which the country members could only partially share.

For the Amendment—

Messrs. Abraham, Atherton, Bottle, Bourdas, Deane, Edwards, Evans, Groves, Haselden, Hills, and Sandford.

Against—

Messrs. Brady, Brown, Dymond, Reynolds, Savage, Stoddart, and Woolley.

The Amendment was therefore carried.

The Amendment was then put as a substantive Motion.

For—

Messrs. Abraham, Bottle, Bourdas, Deane, Edwards, Evans, Haselden, Hills, and Sandford.

Against—

Messrs. Brady, Brown, Dymond, Reynolds, Savage, Stoddart, Sutton, and Woolley.

The Chairman declared the substantive Motion carried.

Moved by Mr. Abraham—

That this Council is not disposed to object to the admission of reporters during the discussion of questions which greatly interest the members, and is of opinion that such questions should not be decided until the members have been fully notified that they are under the consideration of the Council.

The motion was not seconded.

Moved by Mr. Sutton, seconded by Mr. Brown,—

That the shorthand-writer of the Journal be employed to take down the proceedings of the Council at their meetings, and that the matter so obtained be placed on record for reference, and for the use of the Publishing Committee of the Society's Journal or other public papers, at the discretion of the Council.

For—

Messrs. Brown, Sutton, and Woolley.

Against—

Messrs. Abraham, Bourdas, Deane, Edwards, Evans, Haselden, and Hills.

The motion was therefore lost.

BOARDS OF EXAMINERS.

May, 1870.

ENGLAND AND WALES.

Major	Examination,	4	candidates	examined,	3	passed.
Separate	”	1	”	”	1	”
Minor	”	21	”	”	11	”
Preliminary	”	147	”	”	109	”
Modified	”	38	”	”	21	”
		211			145	

Preliminary Examination, 10 certificates were received and approved.

SCOTLAND.

Major	Examination,	2	candidates	examined,	2	passed.
Minor	”	6	”	”	4	”
Preliminary	”	11	”	”	8	”
Modified	”	7	”	”	6	”
		26			20	

Resolved—That the following, being duly registered as Pharmaceutical Chemists, be severally granted a Diploma stamped with the seal of the Society:—

Ferguson, William Kennedy, York.
Grose, Nicholas Male, Wadebridge.
Jackson, John, Tadcaster.

Resolved—That the following Pharmaceutical Chemists be elected Members of the Society:—

Grose, Nicholas Male, Wadebridge.
Matterson, Edward Hardwick, Dewsbury.
Robinson, John, Hexham.

Resolved—That the following Registered Chemists and Druggists be elected Members of the Society:—

Birkett, John, Morecambe.
Corfield, Charles, St. Day.
Eastwood, Lewis, Barnsley.
Evershed, G. Shurlock, 153, New Kent Rd.
Farr, James, Halifax.
Handley, Charles, Stoke Newington.
Harrington, A., Needham Market.
Jones, Robert, Chester.
Lear, George, Birchfield.
Pickup, Robert Lansdale, Manchester.
Poole, William, Blackpool.
Seys, James A., Newport.
Stainer, John, Folkestone.
Thomas, Henry P., Aberffraw.
Twinberrow, J. K., 80, Wigmore Street.
White, Edward A., Mayfield.

Resolved—That the following, having passed their respective Examinations be elected "Associates in business:"—

Bentley, Michael John, Sheffield.
Carr, James Bonwell, Stroud.
Earl, Edward, Terrington St. Clements.
Hanson, Philip Freeman, Chagford.
Round, Frederick, Southport.
Shaw, Charles, London.
Simpson, Robert, Dublin.
Tench, Richard, London.

Resolved—That the following, having passed their respective Examinations, be elected Associates of the Society:—

Arkle, William, London.
Attenburrow, George J., Hertford.
Betts, William Maydwell, Grantham.
Brown, Edward William, Great Malvern.
Butler, Edward Henry, Leicester.
Chifney, Newton, Longsight.
Child, Thomas, New Wortley.
Cross, William Gowen, Shrewsbury.
Greig, William, Sunderland.
Highley, William, Todmorden.
Hughes, John Edward, Bath.
Jackson, John, Bradford.
Jones, Henry Williams, Birmingham.
Knowles, Joseph, London.
Lucas, William, Manchester.
Luddington, Tom, Bristol.
Metcalfe, Edmund H., Richmond, Yorks.
Mitchell, John, London.
Orme, Alfred John, Deal.
Parker, John Marshall, Lincoln.
Pope, Arthur N., Bath.
Romano, Frederick W., Rio Grande do Sul.
Schmidt, Charles, London.
Turton, Randolph C., Birmingham.
Welborn, Robert Walker, London.
Willson, Cornelius, Liverpool.

A list of Members who had paid their subscriptions since the 30th April last was presented, and it was

Resolved—That they be severally restored to their former status on payment of the fine of one shilling.

A list of Members whose subscriptions for the current year are in arrear was handed in, and the Secretary was instructed to send to each Member a special letter of reminder.

The consideration of Resolutions passed at the Annual Meeting in reference to "*Regulations for the Keeping and Sale of Poisons,*" and the "*Educational Scheme*" proposed by Mr. Schacht (see Journal and Transactions, pp. 796 and 799), was postponed to a future meeting of the Council.

STATEMENT OF ATTENDANCE OF MEMBERS OF COUNCIL ON COMMITTEES FOR THE YEAR 1869–70.

	Committees Held once a Month or Oftener.		Committees Held Occasionally.			Special Committees.			Total Number of Committees Attended.
	Finance and House.	Library, Museum, and Laboratory.	Benevolent Fund.	Parliamentary.	General.	Conversazione.	Irish Pharmaceutical Legislation.	Publication of Journal.	
No. of Committee Meetings Held.	15	17	4	9		4	1	2	
Abraham (*Liverpool*)	*	*	*	*	This Committee did not meet during the Year.	*	1	*	1
Bottle (*Dover*)	*	*	*	*		*	*	*	...
Bourdas (*London*)	14	16	4	8		4	*	*	46
Brady (*Newcastle-on-Tyne*)	*	*	*	*		*	*	2	2
Carteighe (*London*)	4	8	1	5		1	*	2	21
Deane (*Clapham*)	*	...	*	*		*	*	*	...
Dymond (*Birmingham*)	*	*	*	*		*	*	*	...
Edwards (*Dartford*)	*	4	*	2		*	...	*	6
Evans (*London*)	5	12	...	6		3	...	2	28
Haselden (*London*)	14	15	3	9		3	1	2	47
Hills (*London*)	*	14	1	8		3	...	*	26
Ince (*London*)	*	1	*	*		1	*	*	2
Mackay (*Edinburgh*)	*	*	*	*		*	*	2	2
Morson (*London*)	*	9	*	4		1	1	*	15
Orridge (*London*)	...	*	...	...		...	*	2	2
Randall (*Southampton*)	*	*	*	...		*	*	*	...
Sandford (*London*)	*	8	...	5		2	...	2	17
Savage (*Brighton*)	*	*	*	*		*	*	*	...
Squire (*London*)	*	3	*	2		1	...	*	6
Stoddart (*Bristol*)	*	*	*	*		*	*	*	...
Williams (*London*)	13	15	4	8		4	*	*	44

* *Not appointed on this Committee.*

ORIGINAL AND EXTRACTED ARTICLES.

ON THE COMPOSITION OF CHLORODYNE.

BY THOMAS STRETCH DOWSE, M.D.

It appears to me very unfortunate that the endeavours of gentlemen to elucidate the much-vexed question as to the composition of chlorodyne cannot be carried on through the medium of your Journal without giving rise to feelings so totally foreign to the subject. The displays of rhetoric by "A Provincial" are worthy of a different, if not a better cause. But I fear they will in no way tend to approximate and elaborate the evidence so kindly rendered by himself and others towards the solution of this controversy, and I do not think the remark uncalled for when I say that if this subject, which appears to be of some interest in a medical and chemical point of view, is to be associated with such feelings as were evinced in the letter of your last number, the sooner the discussion ends the better. It is not by such means that we shall be able in any way to arrive at a definite result; and, after a careful survey of the correspondence which has been kindly permitted to occupy the pages of the 'Pharmaceutical Journal,' I am sorry to say, quite contrary though it be to the opinion of one of your correspondents, that the composition of Dr. Brown's chlorodyne is by no means cleared up. At the same time, before proceeding further, I must state that every respect and consideration ought to be paid to the careful chemical investigation of Mr. Smith, which I consider, of all others, the most to be relied upon. Facta non Verba *versus* Verba non Facta; and, in making this remark upon Mr. Smith's formula, I do so upon the grounds that his analysis was carefully and skilfully conducted, and that his formula is based upon such investigation, that is, by the result of actual experiment, meaning by this *primâ facie* evidence. Although I credit this able analyst with using his best powers to arrive at the chemical composition of Dr. Browne's chlorodyne,—and doubtless he is absolutely correct as far as his analysis goes, —yet I feel persuaded there is something more in it which Mr. Smith has failed to detect, and I believe this to be belladonna. Mr. Smith frankly, and without reservation, admits that the positive detection and isolation of the alkaloids in complex organic mixtures is not always a very easy task, more especially when they exist in small proportions. And again, Mr. Smith states "all my attempts to obtain the evidence of atropia failed." Here, then, we have both positive and negative evidence. No one can doubt from his own assertion the inability of even a scientific analyst like Mr. Smith to discover the small traces of atropine which exist in a complex organic mixture like chlorodyne. How frequently has it been the case, in times past, that the analyst has been unable to discover the presence of strychnine in organic mixtures, when the physiologist has come forward, and rendered its existence indisputable by the tetanic action produced upon the frog! and the mere fact of the chemist being unable to detect atropine in chlorodyne does not for one moment destroy my belief in its presence, as I maintain that I have proved physiologically, beyond doubt, that belladonna is present. At all events, if I have not proved satisfactorily that belladonna does exist, there ought not to be a doubt in the minds of any accurate observer of the action of the alkaloids upon the nervous system but that chlorodyne even does contain a something, which modifies and changes the characteristic action of morphia which every one admits to exist in this compound, and which some believe to be its only active narcotic agent. As in my last letter I appeared to base my belief in the presence of belladonna principally from the effects observed in the case of poisoning there narrated, I will in this communication endeavour to show my experience concerning the action of chlorodyne both with and without belladonna. Dr. Kidd states positively that two preparations of chlorodyne are free from belladonna, if not all. But these bare and brief remarks, as a previous correspondent says, call for limited comment, so I shall pass them by. But I must have a word with your correspondent of last February, and try to meet him upon his own ground, as his reasoning is not only fallacious, but conspicuous for superficial observation. The following are some of his reasons for disagreeing with my *plausible* suggestion as to chlorodyne containing belladonna:—1st. He says, I have never known it, even in full doses, produce any result at all similar to the well-known effects of belladonna. Let me ask him what are the well-known effects of belladonna in ordinary doses? As far as my experience serves me—and I have been in the habit of prescribing this drug for some years—they are, dilatation of pupil, relaxation of muscular spasm, somnolency, vertigo upon first getting out of bed, and, when continued, impaired vision (certainly not contraction of the pupil). Has he never found any of these symptoms after a full dose of chlorodyne? Again, let me ask him, has he ever found contraction of the pupil after a full dose of chlorodyne, as he would most decidedly do, if, as he asserts, its active ingredient is nothing more or less than morphia? Or, again, has he carefully compared by clinical experience, as I have done repeatedly, a mixture of chlorodyne with and without belladonna? I most certainly think not. If so, he would have arrived at a conclusion rather different, as the following will prove. I took three chlorodynes, viz. Dr. Collis Browne's, one made according to Mr. Smith's form without belladonna, and another with belladonna added. I selected three male patients with whom I found morphia to agree. They were not habituated to taking either chlorodyne or morphia, neither had they any organic disease. Such, I thought, fair subjects for notifying how far the symptoms produced by each were similar or dissimilar. First, I will commence with patient No. 1. To this man I gave thirty drops of chlorodyne prepared according to Mr. Smith's form. In half an hour he appeared drowsy, but did not sleep. There was slight headache and nausea. I therefore repeated the dose; in half an hour he was in a sound sleep. Upon awaking, which he did in seven hours after taking the second dose, his pupils were contracted to the size of a pin's head. No. 2. To this man I gave thirty drops of chlorodyne prepared according to Mr. Smith's formula, with the addition of the $\frac{1}{100}$th of a grain of atropine. In half an hour, or little more, he was in a sound sleep; and upon awakening, in three hours, his pupils were dilated. No. 3. To this man I gave thirty drops of Dr. Collis Browne's chlorodyne; and, as no sleep was produced in an hour's time,—only a feeling of stupor,—I gave him twenty drops more. In ten minutes he was in a sound sleep, and continued so for over five hours. When he awoke his pupils were unaffected (not contracted). The following day I reversed the order of things. To No. 1 I gave Dr. Browne's chlorodyne; no alteration of pupil (no contraction). To No. 2 I gave Smith's chlorodyne; the contracted pupil was well marked. To No. 3, Smith's chlorodyne with atropia; the pupils were *slightly* dilated. Hence, let me ask, what does this prove and impress upon the observer? First, that chlorodyne, without belladonna, does most unmistakably contract the pupil of the eye when given in a dose sufficient to produce sleep. Second, that chlorodyne, with belladonna, does not contract the pupil. Thirdly, that Dr. Browne's chlorodyne does not contract the pupil *when given in a sufficient dose merely to produce sleep.*

Again, with regard to the action of belladonna upon the pupil. If to a patient be given the $\frac{1}{60}$th of a grain of atropine, the pupil will be dilated in ten minutes. But if to this $\frac{1}{60}$th of a grain of atropine be added the $\frac{1}{8}$th of a grain of morphia the pupil will remain unaffected. In any case of poisoning by chlorodyne it was shown that the pupils were alternately contracted and dilated, the latter more so than the former, and so much so, that the iris was at times scarcely visible. As the effect of the dilating agent passed off, and the patient became comatose, the pupils became permanently contracted. This, to some extent, led me to the conclusion that morphia played the prime part in Dr. Browne's chlorodyne, its action being modified by belladonna, not the converse, as one of your correspondents suggests, belladonna modified by morphia. Again, your correspondent puts the question, Is it impossible that the joint action of morphia and hydrocyanic acid may have produced the symptoms described by Dr. Dowse? To this I cannot give an answer unless I make the experiment, but at present I have no desire to poison any one, however much it might further our views as to the composition of chlorodyne. This much, however, I can affirm most positively, that your correspondent may give ordinary doses of morphia and hydrocyanic acid for any length of time, and he will not by their conjoint action produce dilatation of the pupil. On the contrary, the pupil will be contracted until such time that the patient becomes so accustomed to its influence that it becomes inert. Again, your correspondent states, Finally, if this chlorodyne really contained any operative proportion of belladonna, I think this very decided drug would long since have proclaimed its presence there. Now, I object to this final assertion upon two points; first that belladonna, in ordinary doses, is not the very decided drug your correspondent imagines; secondly, its action is so modified by morphia, that the usual effects are held in abeyance. And when, further on, he states, We have ascertained with positive certainty that there are present in Dr. Browne's chlorodyne only three ingredients of an active character, viz. morphia, hydrocyanic acid, and chloroform; and again when he states that Mr. Smith's formula, with the addition—may I say?—of a little caramel, will in all probability become the standard of chlorodyne throughout the British realm, I am not surprised when "Another Provincial" looks upon the language of your November correspondent as extremely tall. When he thus summarily disposes of the question, I am extremely sorry that I cannot agree with him, neither can I understand how he arrives at such conclusion, unless it be from the analysis of Mr. Smith, which analysis, however perfect it may be, does not give us the composition of chlorodyne. And I cannot deny too emphatically the assertion of your correspondent when he says that Dr. Browne's chlorodyne is merely a disguised solution of morphia. In my former communication I stated my belief that Indian hemp did not enter into its composition. This I adhere to. I also stated that I thought it probable tobacco did so. This statement I will not retract, although I give it advisedly, as I have not noted sufficiently the physiological action of this drug. Yet, as I do not like to make a statement of this kind without a practical reason, I will suggest to your readers to test it in this way:—Place a drachm of chlorodyne in a small porcelain capsule, and expose it to the air at the ordinary temperature for twenty-four or thirty-six hours until the more volatile constituents have evaporated; then place the capsule in a sand-bath at a temperature of 140° F., when a tobacco-like odour will be emitted. By way of experiment, let him try a drachm of chlorodyne according to Mr. Smith's formula, and the result will be dissimilar. Lastly, I beg to state that the addition of belladonna to Mr. Smith's formula will give results, both therapeutical and physiological, similar to Dr. Collis Browne's chlorodyne.

In this communication I might have entered more fully into the symptoms of those patients upon whom I experimented, but I have tried to deal with the clearing up of this matter in a clear and *practical* manner. The form that I have adopted for some time past is as follows:—

℞	Belladonnæ Extracti	ʒij
	Morphiæ Muriatis	gr. xxx
	Ætheris Rectificat.	f ʒviij
	Chloroformi	f ʒviij
	Acid. Hydrocyanic. dil.	f ʒiv
	Olei Menthæ Piperitæ	xxx
	Capsicine	gr. vj
	Misturæ Acaciæ	ʒxx
	Caramel	ʒj
	Theriacæ	ad ʒlx

M. s. artem. Whether Dr. Browne's chlorodyne contains more or less than is represented in the above formula I cannot say, neither do I attempt to assume decisively upon this point. Of course it is possible, although I deem it improbable, that it may contain some subtle ethereal compound undetected by either chemist or physiologist; and, although my formula contains belladonna,—thus differing from Mr. Smith's,—I am quite sure that the fair, impartial, and accurate clinical observer must feel assured that chlorodyne, prepared according to Mr. Smith's formula, *does contract the pupil*, thus differing from Dr. Collis Browne's; that chlorodyne, prepared according to my formula, *does not contract the pupil*, thus agreeing in its action with Dr. Collis Browne's; these observations applying only to ordinary doses.

Medical Club, May 16th, 1870.

THE SPECIFIC GRAVITY OF TINCT. FERRI PERCHLORIDI.

TO THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

Sir,—My letter to you on the 22nd of April has opened up the whole question, not only of "*What is the specific gravity of the tinct. ferri perchloridi?*" but also, *What is the real gravity of the liq. ferri perchlor. fortior?* for the answer of the first question is involved in the second. It is rather surprising that, notwithstanding the statements of Mr. Abraham, of Liverpool, in Pharm. Journ. Vol. IX. p. 272, and of Jardine, Vol. VI. p. 549, the error as to gravity in the B. P. is perpetuated, not being even in the list of errata printed after the publication of the Pharmacopœia. It is in consequence of this omission that I felt it incumbent upon me to settle the question for my own guidance, if not for the satisfaction of others, seeing that no two operators had arrived at precisely the same result; and practically it is a matter of very considerable importance, when we consider that, on a large scale, the instructions of the B. P. cannot be literally followed, and that the gravity is the test that will be adopted as the standard of strength. The following are the various statements that have been published:—

British Pharmacopœia	1·338
Mr. Squire	1·420
Mr. Yewdall	1·339
Mr. Jardine	1·433
Mr. Abraham	1·445–1·449

Here is sufficient confusion to distract the steadiest judgment.

In order to gain for the result I have arrived at the confidence I trust it deserves, it will be necessary to give the details of the operation.

Whatever may be the merits or demerits of the instructions generally given in the Pharmacopœia, there is plenty of scope in this instance for the exercise of judgment and skill. The character of the vessel to be used is not named.

It may be a basin, a beaker, or a flask. This I think is not quite a matter of indifference, and a correct result, and a successful operation, is dependent upon it.

For my experimental operation I used a one-gallon tubulated retort, and, in order to distribute any errors of manipulation over a quantity, I took eight times the proportions given in the Pharmacopœia. Very pure iron wire was used, and pure acids of the proper strength. It was unnecessary to filter the solution of the protochloride, there being but very little carbon liberated, so that the process consisted of but one operation, conducted from beginning to end in the same vessel. When the liquor had become cold, the product measured 76 oz. The retort was rinsed out several times with small quantities of water, to make up the exact volume of 80 oz., which was measured in a 4-pint conical measure, so as to get a sharp and exact measure. It will be observed that there has been only one transference from the vessel it was made in, and not a drop has been lost. Having brought this fluid to the temperature of 60°, I determined the specific gravity by two weighings. One in a 1000-grain bottle and another in a 700-grain bottle, both being reduced to the same expression, gave the numbers 1·4485 and 1·4497, the difference being 8 in the fourth place of decimals, and agreeing so closely with Mr. Abraham's result, that I think 1·445–1·449 may fairly be adopted as the true gravity of liq. ferri perchloridi fortior.

As a further corroboration, I next proceeded to estimate the amount of $F_2 O_3$, and for this purpose I measured with a 1-drachm pipette one drachm of the liquor, and precipitated with $N H_3$; the precipitate, after ignition, weighed 15·7. This involves an excess that is impossible, if all be correct, and I recollected having washed out the pipette. A second trial, but only draining the pipette as much as possible, gave a result that weighed 15·5 grains; and, considering that pipettes are not always absolutely exact, I think these results come reasonably close to the theoretical quantity.

I may add that I found, when 8 oz. $N O_5$ had been added, all further action ceased, and the solution no longer gave any reaction with ferridcyanide of potassium. All the H Cl is necessary. When finished and cold, the liquor is almost without smell, of a clear, bright, dark-brown colour.

It was now only necessary to determine what is the true specific gravity of the tincture, and for this purpose I used two graduated flasks, a 1000-grain and a 3000-grain. The alcohol and the liquor, being both brought to the proper temperature, were then measured, the capacity of each flask being the exact volumetric proportion required. After mixing and cooling down the mixture to 60°, two weighings gave respectively 1·0064 and 1·0061. It will follow from this that a pint of the tincture will weigh 20 oz. and 50 or 60 grains, being heavier than water.

From the amount of detail I have felt it necessary to give, this letter has extended more than I desired; but, if it suffices to set the question at rest, it may not be deemed too long.

Yours faithfully,
E. M. Rimmington.

Bradford, June 2nd, 1870.

NOTE ON IRISH-GROWN JALAP.

BY WALTER G. SMITH, M.B. DUBL.

FELLOW AND CENSOR OF THE COLLEGE OF PHYSICIANS, ASSISTANT-PHYSICIAN TO THE ADELAIDE HOSPITAL.

In the 'Pharmaceutical Journal' for February 1869, a short paper of mine on home-grown podophyllum and jalap was published. Some account was there given of the growth of podophyllum and jalap in the Botanic Gardens of Trinity College, Dublin, with analyses showing the produce of resin in each case. The podophyllum yielded 4·5 to 4·8 per cent. of resin, and the jalap roots from 9·2 to 11·97 per cent. Professor Bentley and Mr. Hanbury each expressed their conviction that but little success would probably attend the cultivation of jalap in the United Kingdom, or indeed in Europe; and Mr. Hanbury mentioned that in the preceding summer, notwithstanding the great heat, his plants did not produce a single flower. He has since kindly informed me that in 1866 and 1867 some few plants that were in an exceptionally favoured spot retained uninjured some portions of their stems and foliage, and produced flowers in November. The roots of last year, which I have lately examined, were very much smaller, and apparently much poorer than those referred to in my previous paper. The largest was scarcely bigger than a walnut, while the others did not exceed a hazel nut in size. The finest specimen of 1868 growth which I had in my possession weighed 12 oz. when dried.

Although I have had time to make only one analysis of the roots of 1869, it is of interest as affording one point, at least, of comparison between the hot summer of 1868 and the temperate summer of last year. 10 grammes of the dried root were exhausted as before by maceration and continued percolation with rectified spirit. The resulting tincture was concentrated to about one-sixth of its bulk, and then thrown, while hot, into a large excess of water in a counterpoised beaker. The resinous deposit was allowed to stand for twenty-four hours, then washed with warm water, dried, and weighed.

The yield of resin was 0·949 gramme, corresponding to 9·49 per cent.; judging from the external appearance of the roots, such a comparatively favourable result was scarcely to be expected. From such limited data no general conclusions can safely be drawn as to the feasibility of cultivating jalap in Great Britain, yet it at least appears that a plant which seemed "to flourish only on the Mexican Andes," can elaborate its characteristic secretion in fair quantity beneath our insular climate, and under ordinary conditions. I may mention that some further observations on the cathartic effects of the jalap of 1868 showed that from 20 to 25 grains of the powdered root acted in from three to seven hours as a purge.

Additional analyses of jalap roots grown in the United Kingdom would be very desirable, both from a scientific and an economic point of view, and I would be very glad to learn the results of analyses of English-grown jalap.

Mr. J. Bain, the late curator of the Trinity College Botanic Gardens, a deservedly high authority, more particularly in all that relates to the horticulture of exotic plants, has repeatedly assured me that he is convinced that jalap could be grown productively in Ireland, were it worth while to undertake its cultivation. For the following information, respecting the culture of the jalap plant, I am indebted to his kindness. He brought his plants originally from Chelsea many years ago, and every year since they have flowered abundantly in the gardens, and in fact formed one of its chief ornamental attractions in autumn.

The nature of the soil is not of so much consequence, though a light sandy soil, richly manured, is to be preferred. A sunny aspect should be chosen, and the roots be planted against a brick wall—if a number of plants—against parallel dwarf walls, about four feet or more in height. The plants in the College gardens were grown against a high wall. When it was attempted to grow them in the open ground, they did no good, but dwindled away. The plants were always sunk close to the wall, and though not trained purposely they were allowed to climb freely up the adjacent shrubs. Large branches like pea-stakes placed against a wall, answer instead of shrubs, but any support helps it to flower. Jalap flourishes when left to trail along the ground, but does not in that case readily mature flowers. It is, perhaps, doubtful how far flowering affects the development of the roots, but, to illustrate the abundance in which the tubercles are produced, Mr. Bain has told me that he has obtained a very large quantity of roots from one strong plant.

An important point to attend to is the regular carrying out of transplantation. The roots should be transplanted every second year, and in moving them, care was taken to dig very deep. Indeed, it is well to place fresh plants in fresh situations every year, or, if new ground cannot be had, to dig deeply round the old plant, and to replace the exhausted soil by new earth.

The plant soon declines if not properly looked after, and in winter it is prudent to protect the roots from frost by throwing some loose rubbish or other material over the ground.

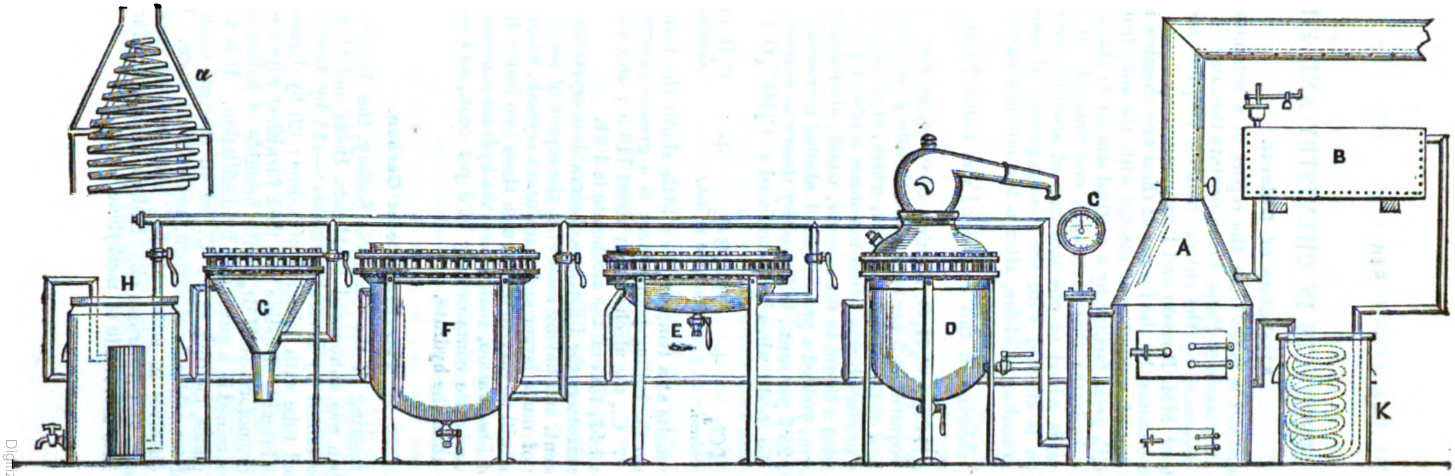
Dublin, May, 1870.

NEW METHOD OF EFFECTING DISTILLATION AND EVAPORATION AT HIGH TEMPERATURES.

We have recently had an opportunity of inspecting an apparatus, fitted up by Messrs. Doulton and Watts, of Lambeth, for effecting distillation and evaporation at high temperatures, which appears to present some important advantages. It consists in the application of a process which was patented some time ago by Mr. Coffey, the pharmaceutical engineer, and in which paraffin *oil*, with a very high boiling-point, is used as a circulating medium for conveying heat from a furnace to the vessels in which it is to be applied. This object is generally attained by the use of steam, but steam at a high temperature must necessarily be under great pressure, and, for any temperature thus produced above 300° F., the pressure must be such as to entail considerable risk of explosion. With metallic vessels this may be provided against, but not so with vessels of glass or stoneware.

The apparatus alluded to above, and which the annexed cut illustrates, consists of stoneware still, pans, etc., which can be worked with perfect safety at any temperature up to 600° F., or even higher. In the sketch, A represents the furnace, which may be situated at any distance from the other parts of the apparatus. It consists of an enclosed fire, over which is fixed a coil of iron pipe, shown in section at the other end of the sketch at *a*. The paraffin oil is heated in this coil to any required temperature, which is indicated by the pyrometer C, and it is thence conveyed to the jacketed pans, etc., D, E, F, G, where it can be turned on or off, as is usually done with steam. It circulates through the supply-pipes and within the jackets of the pans in a heated state, but not under pressure,—its boiling-point being above the temperature to which it is subjected. As it cools under the influence of the work done, it falls by gravitation to the lower range of pipes, and passes back to the furnace to be heated again. It will be seen that, in this method of applying heat, the difficulties that have been experienced in heating glass and stoneware vessels with high-pressure steam are entirely obviated. We believe that, in the first instance, it was found difficult to prevent the oil from permeating the stoneware and thus contaminating what was contained within the vessels; but we have been assured that the vessels are now so well glazed that no such effect occurs.

There are many chemical processes in which the use of this apparatus will be found advantageous.



Mr. Coffey's Apparatus for effecting Distillation and Evaporation at high Temperatures.

NOTES AND ABSTRACTS IN CHEMISTRY AND PHARMACY.

Alcoholate of Chloral.

The following abstract is taken from the report of a commission appointed by the Société de Pharmacie of Paris, to inquire into the cause of the differences in the characters presented by the chloral hydrate prepared according to the respective methods of MM. Roussin and Personne.

The preparation obtained by the former of these two chemists is now declared to be a compound not of water but of alcohol with the anhydrous chloral. It can be prepared with great facility by a method similar to that adopted for the production of the hydrate; that is to say, one molecule of the anhydrous chloral (147½ parts) is added to one molecule of absolute alcohol (46 parts).

The combination is effected with the disengagement of considerable heat, and the product on cooling solidifies, after a few minutes' agitation, to a mass of crystals.

The amount of chlorine in this compound was found by experiment 55·49 and 55·43 per cent.

The formula, C_2HCl_3O, C_2H_6O, requires 55·0, whilst that of the hydrate, C_2HCl_3O, H_2O, requires 64·3 per cent. On distilling the hydrate with water and caustic potash, a distillate was obtained, which, after removal of the whole of the chloroform produced, was found to consist solely of pure water; whilst the alcoholate yielded a liquid in the receiver, which, after separation of the last traces of chloroform, yielded a proportion of alcohol corresponding very nearly with the amount, 23·7 per cent., indicated by theory as resulting from the decomposition of the body already formulated; C_2HCl_3O, C_2H_6O+KHO, yielding

$$\underset{\text{Chloroform.}}{C_2HCl_3} \quad + \quad \underset{\text{Formate of Potash.}}{KCHO_2} \quad + \quad \underset{\text{Alcohol.}}{C_2H_6O.}$$

The alcoholate melts at a temperature a little above the fusion-point of the hydrate. Between the boiling-points there is a greater interval; the hydrate boiling at about 97° C., the alcoholate at about 113·5°; and whilst the density of the hydrate is 1·57, that of the alcoholate is 1·34.

Add to these characters the differences observable in crystalline structure—the hydrate deliquescent, and having somewhat the aspect of loaf-sugar; the alcoholate consisting of much larger and translucent crystals, which do not abstract moisture,—and it will be easy to distinguish these two bodies from each other.

It is worthy of observation, that whilst the hydrate contains 88·8 per cent. of chloral, the alcoholate contains only 76·3 per cent., and is, therefore, probably less active than the hydrate.

Tetrabromide of Carbon.

At a recent meeting of the Chemical Society, the discovery of the tetrabromide of carbon was announced by Messrs. Bolas and C. E. Groves. This compound is obtained by several processes:—(1) by heating bisulphide of carbon in a sealed tube with bromide of iodine; (2) by digesting bromopicrin (CBr_3NO_2) with bromide of iodine in a flask furnished with a condensing tube; (3) by heating bromoform ($CHBr_3$) with bromide of iodine in a sealed tube. The product is obtained in a pure state by distillation. It is a white substance, crystallizing in plates, melting at 91° C., of an ethereal odour, somewhat resembling that of tetrachloride of carbon, and sweetish taste. It is not soluble in water, but dissolves in ether, alcohol, bisulphide of carbon, chloroform, bromoform, benzol, and American oil. Sodium amalgam reduces it to bromoform, and then into dibromide of methylene.

This interesting body belongs to the group which has yielded nearly all our anæsthetics, and it will be seen on inspecting the tabulated arrangement below, that there is now but one member missing, to be supplied, we may safely hope, by future research. The tetriodide of carbon is the body which yet remains to be found to complete the series.

Methyl . .	Chloride. CH_3Cl	Bromide. CH_3Br	Iodide. CH_3I
Methylene .	Dichloride. CH_2Cl_2	Dibromide. CH_2Br_2	Biniodide. CH_2I_2
Formyl . .	Trichloride. $CHCl_3$ (Chloroform.)	Tribromide. $CHBr_3$ (Bromoform.)	Tri-iodide. CHI_3 (Iodoform.)
Carbon . .	Tetrachloride. CCl_4	Tetrabromide. CBr_4	Tetriodide. CI_4 (Missing.)

Method of Imparting to Ivory, Bone, and Horn a beautiful Red Colour.

Take 4 grams of picric acid and dissolve in 250 grams of boiling water; when cold, add 8 grams of liq. ammoniæ. Dissolve also 2 grams of magenta (crystals) in 45 grams of alcohol, dilute with 375 grams of hot water, and add 50 grams of ammonia. As soon as the red colour of the magenta solution has disappeared, the two solutions are mixed together, making a bulk of liquid amounting to about half a litre. Ivory and bone should be placed in very weak nitric or hydrochloric acid first, before being immersed in the ammoniacal liquid; wood cannot be dyed in this liquid unless it has been previously painted over with paste made from flour. If to the ammoniacal liquid some gelatine solution is added, it may serve as a red ink which does not attack steel pens. By varying the proportions of the magenta and picric acid, the tints obtained may be varied from a bluish-red to a bright orange-red. The desired colours do not appear till the ammonia is evaporated.—*Revue Hebdomadaire de Chimie, April 21st*, 1870.

Metallic Hydrogen.

At a recent meeting of the Lyceum of Natural History in New York, a paper was read by Dr. Loew, Assistant in the College of New York, "On the Preparation of Hydrogen Amalgam." The researches of Graham went to show that hydrogen could be alloyed with palladium, and that it was also contained in meteoric iron. He condensed the hydrogen in the palladium, and came nearer proving its metallic character than any other person had done. Schoenbein, in his search for ozone, found a method for making the peroxide of hydrogen, which brought him to the very threshold of discovering hydrogenium. Schoenbein's experiment was this:—An amalgam of zinc and mercury is violently agitated in water; the water is then filtered, and, on being examined with iodide of starch and protosulphate of iron, will be found to contain peroxide of hydrogen or oxygenated water. Dr. Loew has carried the investigation further, and has, instead of oxidizing the hydrogen, succeeded in combining it with the mercury.

He takes an amalgam composed of not more than three or four per cent. of zinc, and shakes it with a solution of bichloride of platinum; the liquid becomes black, and a dark powder settles to the bottom. The contents of the flask are then thrown into water, and hydrochloric acid added to dissolve the excess of zinc. The amalgam of hydrogen and mercury at once forms in a brilliant voluminous mass, resembling in every way the well-known ammonium amalgam. It is soft and spongy, and rapidly decomposes, but without any smell of ammonia. The hydrogen escapes, and soon nothing but pure mercury is left in the dish. The experiment appears to show conclusively that an amalgam of hydrogen and mercury can be formed, and that hydrogen is really a metal. It would also throw some doubt upon the existence of the amalgam of ammonium and mercury, and offer an explanation of that compound on the basis of its being the same amalgam of hydrogen and mercury that is prepared in the way now pointed out by Dr. Loew. The smell of escaping ammonia must be traced to some other source than the existence of that radical in combination with mercury.—'*Chemical News' from the 'Scientific American.*'

Cryptophanic Acid, the Normal Free Acid of Human Urine.

At a recent meeting of the Chemical Society Dr. Thudichum described a new organic acid,—cryptophanic acid, the presence of which he considers the cause of the acid reaction usually exhibited by urine.

It is extracted somewhat as follows:—"The urine is rendered alkaline with milk of lime and filtered, it is then acidified with acetic acid and evaporated down to a syrup; after standing some time, the syrup is drained from the crystalline deposit and is mixed with strong alcohol. On shaking, a dark coloured precipitate forms, from which the fluid is decanted.

The precipitate, which is the impure calcium salt, is washed with alcohol, dissolved in a small quantity of water, and filtered through calico. On again adding alcohol, it is reprecipitated. By repeated solution and reprecipitation in this way it may be obtained nearly pure.

To complete the purification, the calcium salt is dissolved in water, mixed with solution of lead or copper acetate, the liquid filtered from the impure basic salt, and the clear solution mixed with alcohol. Pure lead or copper cryptophanate is then precipitated. To obtain the acid, the lead salt may be decomposed with an equivalent quantity of dilute sulphuric acid, or the copper salt by sulphuretted hydrogen.

The acid is a colourless gummy mass, soluble in water; it decomposes carbonates with effervescence. The aqueous solutions of the earthy salts give, amongst other reactions, with mercury nitrate, a voluminous white precipitate. The ordinary estimation of urea by Liebig's process is thus shown to be liable to errors, and to require a correction for cryptophanic acid, which has probably increased all values for urea by from 5 to 10 per cent. Cryptophanic acid may be considered a dibasic acid of the formula $C_5 H_9 NO_5$; or it may be represented as tetrabasic with the formula $C_{10} H_{18} N_2 O_{10}$. In that case, the metallic salts, of which a considerable number are described in the original paper, will have the general formula $C_{10} H_{14} M'_4 N_2 O_{10}$. Many of the salts are soluble in water, but some, as those of silver, lead, and mercury, are insoluble.

ON A SPECIES OF *IPOMŒA*, AFFORDING TAMPICO JALAP.

BY DANIEL HANBURY, ESQ., F.R.S., F.L.S.

Two centuries and a half have elapsed since jalap, the tubercle of a convolvulaceous plant of Mexico, was introduced into the materia medica of Europe. The botanical origin of the drug long remained unsettled, evidence of which exists in the fact that two plants, neither of which yields jalap, have in succession received, and still retain the specific name *Jalapa*. The veritable source of jalap, however, was brought to light between the years 1827 and 1830, in which latter the plant was described by Wenderoth as *Convolvulus purga*. In 1833 it was figured by Hayne under the name of *Ipomœa purga*; but in 1839 it was transferred, on account of its tubular corolla and exsert stamens, to Choisy's genus *Exogonium*. As this genus has been recently united to *Ipomœa* by Dr. Meisner, it appears best to return to the name proposed by Hayne, and to call the true jalap-plant *Ipomœa purga*.

The unsettled condition of Mexico, and the fluctuations of commerce, have alternately depreciated or enhanced the value of jalap, and have led to the occasional importation of other roots possessing more or less of the characters of the true drug. Of such kinds of jalap, one of the most remarkable is a tubercule imported a few years ago for the first time from Tampico, and thence called *Tampico jalap*.* This drug has been extensively brought into the market (that is to say, by hundreds of bales); and though it is less rich in resin and less purgative than true jalap, yet, on account of its lower price, it has found a ready sale, chiefly in continental trade.

As the botanical origin of this so-called Tampico jalap, and even its place of growth, were completely unknown, I addressed a letter, in November 1867, to my friend Hugo Finck, Esq., Prussian Vice-Consul at Cordova (Mexico), begging that he would, if possible, procure for me some information on the subject. Mr. Finck at first expressed strong doubts as to Tampico jalap being anything else than the root of *Batatas jalapa*, Chois., known in Mexico as *Purga macho*. Upon inquiry, however, he ascertained that such could not be the case, but that it is a production of the State of Guanajuato, where it grows along the Sierra Gorda, in the neighbourhood of San Luis de la Paz. At this town, and in the adjacent villages, it is purchased of the Indians and carried by the muleteers to Tampico, where it is known as *Purga de Sierra Gorda*.

All attempts to procure specimens of the plant were for some time fruitless, chiefly owing to the difficulty of finding any one in the district who could be induced to take the needful trouble. The perseverance of Mr. Finck and his friend, Mr. E. Benecke, Consul-General for Prussia in the city of Mexico, overcame at length this obstacle, but only to meet with others hardly less embarrassing. The first lot of specimens dispatched from Guanajuato was stolen from the mail; the second shared the same fate; while a third, which included live tubercules, was, by successive detentions on the way, fully five months in reaching England. The box, however, came to hand in June last; and amid a mass of damp earth and decaying matter, I had the satisfaction of discovering one solitary tubercule exhibiting signs of vitality. This, placed in a greenhouse and carefully nursed, soon began to grow with rapidity, and, on removal to an open border, produced a tall and vigorous plant, which towards September showed signs of flowering. It was then taken up and replaced in the greenhouse, where it blossomed freely in October last, but did not mature any seeds. Accompanying the tubercules, but of course in a separate box, my correspondent sent some pressed and dried specimens from Guanajuato, which corresponded perfectly with the growing plant.

Having ascertained from the study of these materials, that the plant belonged to the genus *Ipomœa*, I endeavoured to identify it with some species described in the 'Prodromus' of De Candolle, or in the subsequently published 'Annales' of Walpers, but without success. Neither was I able to find any corresponding specimen in the herbaria of the British Museum or of the Royal Gardens of Kew. In the Paris Museum there is a plant, collected by Galeotti on the lofty Cordillera near Oaxaca, which, so far as a scanty specimen enables me to judge, accords precisely with that received from Mr. Finck. It bears a number which is not mentioned in the enumeration, by Martens, of Galeotti's *Convolvulaceæ* (contained in the 'Bulletin de l'Académie Royale de Bruxelles');† and I therefore conclude that it is unnamed. Under these circumstances, I have drawn up the following diagnosis and description of the plant, which I propose to call *Ipomœa simulans*. The specific name is chosen in allusion to the remarkable similarity which the plant bears in foliage and habit to the true jalap (*Ipomœa purga*, Hayne), not to mention the resemblance of its tubercules. The funnel-shaped corolla and pendent flower-buds of the Tampico jalap-plant are quite unlike the corresponding parts of *I. purga*, and furnish a ready means of distinguishing the two species:—

IPOMŒA SIMULANS, sp. nov. Radice tuberosâ, caule volubili herbaceo glabro, foliis ovatis, acuminatis, cordatis v. sagittatis, indivisis, pedunculis unifloris solitariis, sepalis parvis.

Hab. in Andibus Mexicanis *Sierra Gorda* dictis, prov. Guanajuato (fide cl. *Finck*); in regione frigidâ ad ped. 8000 propè Oaxaca (*H. Galeotti*, n. 1869 !).

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* I cannot, at least, trace this jalap to have been offered in commerce as a distinct sort earlier than about five or six years ago.

† Tome xii. pt. 2 (1845), p. 257.

Radix napiformis v. subglobosa v. elongata, carnosa, 2–3 poll. longa, basi fibrillosa. *Caules* herbacei, graciles. *Folia* glaberrima, 2–4-pollicaria, 1–2 poll. lata, lobis baseos acutis v. rotundatis v. subtruncatis, petiolo tenui, 1½–2½-pollicari. *Pedunculi* axillares, petiolum subæquantes, penduli, uniflori v. in plantâ vegetiore novelli alabastra duo ferentes, altero semper (ut videtur) abortivo. *Pedicelli* incrassati, basi bracteis 2 minutis. *Sepala* ovata, obtusa, exteriora paullulum breviora. *Corolla* infundibuliformis, 1½–2 poll. longa, glabra, rosea, pallidè striata. *Stigma* bilobum. *Capsula* calycem superans, conica, 2-locularis, valvis 4 coriaceis. *Semina* glabra.—*Proceedings of the Linnean Society.*

METHYLIC ETHER AS AN ANÆSTHETIC.

Dr. Richardson, in a communication made to the Medical Society of London, after reviewing the claims of a number of anæsthetic fluids and vapours, decided in favour of methylic ether for rapid anæsthesia. The ether is made by digesting one part of pure methylic alcohol with two of strong sulphuric acid. The mixture is heated, and the methylic ether, which passes over as a gas, is subjected to frequent washings in strong potash solution. The ether remains as a gas even below zero; it has an ethereal odour; it is, chemically, an oxide of the radical methyl. Its vapour density is 23, taking hydrogen as unity, and it burns in air. The strongest objection to methylic ether is, that it is a gas; but happily the difficulty is to a large extent overcome, the gas being very soluble in various substances. Water takes up thirty-seven volumes of the gas, yielding an ethereal fluid of pleasant taste. Pure ethylic ether and alcohol take up over a hundred volumes. For practical purposes the author prefers absolute ethylic ether of sp. gr. 720, and boiling-point of 92° F. as the solvent. The ether is charged with the gas at a temperature of 32° F., and the compound is at once bottled and firmly corked down. It should be kept for a time before being used, the process of keeping producing a comparatively stable compound. In using this compound, which he proposes to call methyl-ethylic ether, the author at present employs the simple mouthpiece invented by Mr. Rendle, and made merely of leather.—*Medical Times and Gazette,* April 9, 1870.

CROTONIZED ETHER.

As a remedy in habitual costiveness, Dr. Rubio, of Barbacoas, strongly recommends what he terms "crotonized ether." ('Medical Times and Gazette,' April 16th.)

The following is the formula given :—Croton Oil, ʒi, Sulphuric Ether, ℥i : mix. The dose is 20 drops in an ounce of cold water, with a little sugar, which may be repeated in an hour if necessary.

IMPROVEMENTS IN DENTISTRY.

At a meeting of the Medical Society of London, April 25th, Mr. Napier read a paper "On an Improved Method of Stopping or Plugging Teeth," and exhibited some specimens in which the cavities caused by decay were severally filled up with hippopotamus ivory, mother-of-pearl, and india-rubber, vulcanized to the consistence of ebony. Mr. Napier desires to obviate the necessity for using metal in any form for stopping teeth, and read this paper with a view to prove the importance of the object he advocated. He argues that one of the principal causes of chronic inflammation in teeth that have been stopped according to the method now in general use, is that metal is a readier conductor of heat and cold than the natural substance of which a tooth is composed. The improvements he advocated would benefit both operator and patient.

THE CHESHIRE SALT-SPRINGS.

The salt at the British Salt-works, lately visited by the Liverpool Polytechnic Society, occurs in two beds, situated one above the other, separated by about 30 ft. of clay, intersected by small veins of salt, the two beds together being about 60 ft. thick and 800 yards broad, and 1½ mile long. Some rock-salt requires no preparation to convert it into white culinary salt. More frequently, however, it is coloured red or brown from the admixture of clay or bitumen; it then requires to be purified by solution and recrystallization.

The brine-springs of Cheshire do not rise to the surface of the ground. They emerge from the surface of the rock, and when the spring is tapped will rise in the bore-hole from 80 to 90 ft. The shaft is 6 ft. square, and about 180 ft. deep. The sides of the shafts are carefully boarded with planks, and an inner planking of 6-in. boards, 4 ft. square, is then built in, and the space between the boards well puddled with clay to keep out fresh-water surface springs. An iron pipe, about 9 in. internal diameter, is then let down into the boring. The brine will rise in this pipe about 90 ft.; it has consequently to be lifted by a pump to about the same extent. A continuation of the pipe from the pump conducts the brine into a larger reservoir. The reservoir, which may be about 200 ft. long by about 60 or 80 ft. broad, and 4 to 7 ft. deep, is not built for the purpose of allowing sedimentary matter to deposit, for the brine as it is pumped up is perfectly clear and free from particles in suspension. It is of a clear sea-green colour, and the reservoirs are built to serve merely as a store of brine on a high level, and from which it may be drawn down to supply evaporating pans as needed.

The evaporating pans are contained in a shed, open at the sides to permit free currents of air to pass over their surface. The pans are set in a firm foundation of brick-work, which, however, does not extend up the sides. There are generally four furnaces to each pan, and the flues, so built as to support the pan, radiate over the whole bottom. The Cheshire brines, which have a specific gravity of 1·2, and contain about 24 per cent. of common salt, are of so pure a quality that they require no preliminary februa-tion. The brine, therefore, is at once run into the evaporating pans. The pans are of ½-in. iron boiler-plates, riveted together. They incline somewhat towards the end furthest from the fires. The inclination is from 6 to 8 in. in the whole length.

Three kinds of salt are manufactured. The difference consists in the size of the crystal, depending upon the rapidity with which the evaporation is conducted; thus the finest grained salt is made by rapid boiling, the coarsest at about a temperature of 150° and the medium quality between these two points.

One system of the evaporating process is as follows:—Brine is run into a pan until it is three parts full. A little ox-blood or white of egg, or any albuminous matter, is then thrown in to assist in the formation of a scum. The brine is then brought to the boil as rapidly as possible, and a scum which forms on the top is removed by lightly skimming the surface with a piece of board. The crystals of salt begin to separate almost as soon as the brine is brought to the seething-point, and when about half of the water has been evaporated fresh brine is run in. The salt that has boiled out is removed twice in twenty-four hours. This operation is effected by a perforated scoop, and the salt is put into wooden moulds, or tubs, about 18 in. high, and 9 in. broad at the top, diminishing to about 7 in. at the bottom. These tubs are put into the salt-pan to be filled, and stand on a ledge on the side about 6 in. from the bottom of the pan. When the tubs are full the salt is slightly pressed down, and the tubs are removed from the ledge to a perforated floor, so that the mother liquid may be drained away from the salt. When the salt in the tub has drained twelve hours the tubs are reversed, and then withdrawn from the squares of salt, which are removed to the drying chamber, where they are allowed to remain until they become dry. The pans are not allowed to cool, except for the purpose of cleansing, the brine being repeatedly pumped in, the process of evaporation being continuous. The operation called "dodging," or "scabbing," is performed with a pickaxe furnished with a long handle, and having the iron flukes flattened at the ends. A man stands on the floor that runs around the pan, and by striking with the axe he loosens the incrustation, and then removes it with a rake and spade. The scab consists of a little clay and sulphate of lime, but principally of common salt which has been burnt on the bottom of the pan.—*Mining Journal.*

ON THE ANTIQUITY OF THE IRON-MINES OF THE WEALD.

BY W. BOYD DAWKINS, M.A., F.R.S.

Perhaps few, as they go by train from Tunbridge to Hastings, through the well-wooded, sparsely-populated country, now plunging into a tunnel, now looking down a valley from the top of an embankment, realize that they are in the midst of what was not very long ago the principal iron district in England. The large woods, the green fields, the quaint old houses, contrast so strongly with the dense population, the clang of forges, and the large barren cinder-heaps of the black country, that it is hard to believe that the weald of Kent and Sussex at one time stood at the head of our iron export trade, or that the last furnace grew cold but some forty years ago; yet the facts are beyond doubt. Mr. Lower, the eminent Sussex antiquary, has traced the mediæval history of the ironworks of Sussex, in a valuable series of papers, published by the Archæological Society of that county, and the Rev. E. Turner has proved that they have probably been worked since the time of the Roman occupation of Britain. The evidence that came before my notice, while I was engaged in the geological survey of the district in 1862, seems to point towards their being of a far higher antiquity. The extent to which the ironstone has been worked can only be realized by a careful survey. The old pits lie so closely together, and are so universally found wherever the ironbearing stratum occurs, that it is almost possible to map the latter by their indications alone.

We will first of all indicate the position of the layer of ironstone in the geological scale. Resting on rocks of marine origin, that contain all kinds of waifs and strays of marine life, is the large series of clays, lime, and sandstones, 1200 ft. thick, that occupy the area of the Weald. It was deposited in the ancient estuary of a river that drained some great unknown secondary continent. About its middle is a stratum, termed the Wadhurst clay, which furnished the two thin bands of ironstone, from which all the iron was obtained. These bands are not continuous layers, but consist of nodules, in each of which is a fragment of bone or wood, or masses of fresh-water shells, around which the ore has been deposited. The shells are of the same familiar forms as those now living in our rivers—*Paludina Unio,* and *Cyclas.* The fragments of wood belong to the fir tribe, and to the same family as the tree-ferns of Australia and New Zealand; while the remains of the animals belong to the crocodiles, monstrous lizards, allied to the iguana and monitor, to the long-necked plesiosaur, and the short-necked ichthyosaur that, in a world in which the class Reptilia were dominant, occupied the position and rivalled the bulk of whales. On the top of this great mass of river-deposits lie the cretaceous rocks, of which the North and South Downs are mere tatters spared by the rains and frosts of countless ages. Plutonic action has been very rampant throughout the Wealden area, tossing rocks up and throwing them down, and twisting them about in almost every conceivable manner. A few coloured sheets of paper torn to pieces and then crumpled up and squeezed into a solid mass, will give an adequate idea of their condition before they were brought under atmospheric influences. If we cut valleys in miniature out of the mass of paper, the coloured fragments exposed in their sides will represent most accurately the disconnected surfaces of the rocks, laid bare by rain, frost, and the erosive action of the streams. The iron-bearing stratum, therefore, does not now form one continuous mass, but is scattered about in patches, from Tunbridge on the north to Hastings on the south, and from Horsham in the west to the old port of Winchelsea in the east. Throughout this district are the traces of the old works, consisting of the old embankments of the hammer-ponds, large heaps of scoriæ, and the mine-pits, as they are termed, from which the ore was obtained.

The mine-pits are small, circular, or oval depressions, from 3 to 6 ft. wide, and from 6 to 8 ft. deep. They consist of partially filled up shafts, which varied in depth according to the thickness of the clay above the ironstone from 7 or 8 to 40 ft. They lie very close together, and are now very generally overgrown with trees; and as the ground they occupy is very much broken up, it is not yet brought under cultivation. The method of mining was to sink a shaft down to the ironstone, to remove as much ore as was within reach, then the shaft was partially filled up, and the operation repeated; and for this reason the mine-pits are so numerous and so close together that they bear a strong resemblance to the hut-circles within Celtic and Roman forts, such as those of Penknowle near Wells, Worle Hill near Weston-super-Mare, Brent-knowle in Somerset, and Penselwood on the Somerset border of Wilts.

The first historical notice of the Wealden ironfield is to be found in the grant of Henry III. to the town of Lewes after the battle, of a toll of one penny on every cart laden with iron. From that time there is evidence that the iron trade gradually became of more and more importance. Tombstones, horse-shoes, tires for wheels, and andirons were the staple manufactures. The first cannon cast in England was made at Buxted, in 1543, a hamlet about two miles from the beautiful little town of Uckfield; and it created such an interest at the time, that the names of the founders are still handed down by tradition. Ralph Hogge, or Hog, was the ironmaster, and Hugget was the founder; the furnace in which it was cast was Hugget's furnace.

"Master Hugget and his man John,
They did cast the first cannon."

The first mortar also made in this country was made at Eridge Green. Fuller bears testimony to the importance of the gun-manufacture in his time. "It is almost incredible," he writes, "how many great guns are made of iron in this county (Sussex)." In the seventeenth century it reached its most prosperous stage; and so important were the ironworks considered in the Civil War of 1643, that all those belonging to the crown, or to royalists, in West Sussex were destroyed. Up to the end of the seventeenth century the iron trade continued to flourish, and even in 1724 it was considered in Sussex, according to Mr. Lower, the chief interest in the county. At the beginning, however, of the eighteenth century, a cause which had frequently been felt before, and provided against by many legal enactments, made itself seriously known,—the scarcity of fuel for the smelting of the iron. As far back as the year 1548, an order was issued that no wood should be turned into pasture. After this date the growing scarcity of wood was again and again brought before the notice of Government, but to no purpose. Nearly all the large timber trees had already been cut down in the great Wealden forest, until at last the increased cost of the charcoal compelled the Wealden ironmasters to shut up their works. Some of them, indeed, during the reign of Henry VIII., had already migrated to South Wales, where they founded the extensive ironworks at Aberdare and Merthyr Tydfil. The iron-foundries of South Wales, therefore, may be considered in part the offspring of those in the Weald. The decline rapidly went on during the seventeenth and eighteenth centuries, and was very much accelerated by the Civil Wars. "In 1653 there were twenty-seven furnaces in Sussex, of which ten were abandoned before 1664, and partly ruined, but repaired and stopped on account of the war and hopes of encouragement, seven ruined and not rebuilt," and there were also "forty-two forges, of which nineteen were ruined before 1664, and so remain; five laid aside, and eighteen continue in hopes of encouragement." This return is taken from the transcript of a paper found at Horsham, and published by Mr. Lower in the Sussex archæological collections. Thus there is clear evidence that within eleven years at least one half of the iron trade had left the Weald. The furnaces after this became fewer and fewer: in 1740 they were reduced to ten, in 1788 to two, and in 1796 there was only one forge left in Sussex, at Ashburnham, near Battle, which furnished 173 tons of iron in that year. Thus, gradually, during the latter half of the eighteenth century, the black forges of Sussex crumbled away, the sterile ash-heaps became overgrown with green moss and long rank grass, the ground covered with impenetrable thickets of blackthorn, hazel, ash, and alder, and the rude clang sounded less and less frequent, until in 1825 that of Ashburnham became silent, and the iron-mines of the Weald were abandoned.

By far the greater number of the mine-pits were doubtless made during the 600 years of which we have given an outline, from the time of Henry III. downwards, but some of them can be carried back at least as far as the Roman occupation of Britain. Thus, in 1844, Samian and other Roman ware, a bronze fibula, and other objects undoubtedly Roman, were found by the Rev. Edward Turner in a mass of scoriæ, covering an area of from six to seven acres, to a depth of from 2 to 10 ft., in the parish of Maresfield, near Uckfield. Among other objects were coins of Nero (A.D. 64 and 68), Vespasian (69 and 79), Tetricus (274), Diocletian (234–236). The predominance of the coins of Vespasian leads Mr. Lower to the conclusion that the works were in operation in the time of that emperor, or his successor Titus. From the admixture also of coins of different dates, the long continuance of the works may be fairly inferred. Similar discoveries of coins at Chiddingly, near Hailsham, and at Seddlescombe, near Battle, prove that the mines were very largely worked during the Roman occupation. There appears also to be presumptive evidence that they were worked before the landing of Cæsar. In 1862, I found on the surface of a cinder heap, to the north of Bathurst Wood, near Battle, fragments of rude, unturned pottery, identical in coarseness of texture, and in the presence of little fragments of quartz, with that usually termed Keltic. There were also rude flint flakes, which must have been brought there by the hand of man, because the material is foreign to the area. I met with flakes also in association with the scoriæ at Seddlescombe. It is, indeed, undoubtedly true that rough pottery, unturned in the lathe, and flint flakes, were used in Britain during the Roman occupation. Both occur along with Samian ware, bronze fibulæ, and the like, round the Roman castrum at Hardham, near Pulborough, which I explored in 1863. Both most probably were used by the peasantry long after the Roman conquest; but, nevertheless, when they are found apart from any trace of Roman art, there is, to say the least, a possibility of their belonging to a far more ancient period. The possibility in this particular case widens and deepens into a probability when we read in Cæsar's 'Commentaries' (book v. chap. 12), that the dwellers in the maritime part of Britain "Utuntur aut æreo aut taleis ferreis ad certum pondus examinatis pro nummo. Nascitur ibi . . . in maritimis ferrum; sed ejus exigua est copia." In the fourteenth chapter he designates Cantium (Kent) as being wholly "maritima regio;" and in the thirteenth he defines Cantium as being one of the angles of triangular Britannia, including most probably not only Kent, but also a considerable portion of eastern Sussex. Again in the twelfth chapter, he says expressly that the Maritima pars was inhabited by Belgic colonists, who crossed over from the country between the Seine and Marne and the Rhine; that is to say, from the nearest points of the Continent. All these passages taken collectively would imply that the maritime part in which the iron occurred was that nearest the Continent, or Cantium, *i. e.*, Kent and Sussex. Now, the recently published geological maps of those two counties show that the iron-bearing strata are found only in the extreme south of the present county of Kent, and in the Wealden portion of Sussex; and therefore such a remark could only apply to that area. In full, to sum up the whole case, we find on the one hand, near Battle, scoriæ which may be ascribed to a date anterior to the landing of the Romans; on the other, we find Cæsar mentioning the fact of the occurrence of iron in that very district; and therefore we may fairly infer that some at least of the mine-pits in that neighbourhood date back from a time anterior to the first Roman landing. The nearest mine-pits to the layer of scoriæ are those of Seddlescombe and Brede, those of the former place having been worked by the Romans.

It would indeed have been a most exceptional case had the conquerors of Britain, who worked the tin and copper of Cornwall, the lead and zinc of Somerset, and extracted gold out of the solid quartz rock of Wales, neglected to carry on the works begun before their landing.

Direct proof that mining was carried on in the Weald some nineteen hundred years ago we cannot get, but the evidence tending towards that conclusion seems to be worthy of notice. The faintest glimmer of light thrown upon those very obscure times should be treasured up.—*Transactions of the International Congress of Prehistoric Archæology, Third Season.*

AN ACT FOR THE MORE EFFECTUALLY PRESERVING THE HEALTH OF HIS MAJESTY'S SUBJECTS, FOR ERECTING AN APOTHECARY'S HALL IN THE CITY OF DUBLIN, AND REGULATING THE PROFESSION OF AN APOTHECARY THROUGHOUT THE KINGDOM OF IRELAND.

31 George III. c. 34.

Whereas not only many but great inconveniencies have arisen from the want of an hall amply supplied with medicines of the purest quality, prepared under the inspection of persons well skilled in the art and mystery of such preparations, but also frequent frauds and abuses have been imposed and practised on many of his Majesty's subjects within the city of Dublin, and the liberties thereof, and in other parts of the kingdom of Ireland, by the ignorance and unskilfulness of divers persons pretending to the art and mystery of an apothecary, to the injury of the fair trader, the disappointment of the physician, and the imminent hazard of the lives of his Majesty's faithful and loyal subjects throughout the realm: And whereas the master, wardens, and commonalty of the Corporation of Apothecaries, and other apothecaries of the city of Dublin, have by their petition, humbly prayed that an Act be passed, enabling them to raise a fund for the purpose of erecting such hall, with such clauses, powers, jurisdictions, and authorities, as may in future prevent such frauds and abuses, and thereby tend to preserve the health of his Majesty's subjects:

Persons herein named subscribed £100 each towards erecting a hall.

And in as much as Henry Hunt, Anthony Thompson, John Hastings, Peter Kelly, George Kiernan, Richard Magan, James M'Laughlin, Daniel Moore, John Pentland, Foden Perrin, Robert Powell, Stephen Reynolds, Charles Ryan, John Usher, and Richard Usher, have each subscribed the sum of one hundred pounds for the purpose of creating a fund for the erection of such hall: be it enacted by the King's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same:

Company of Apothecaries to consist of a Governor, Deputy Governor, 13 Directors, and the Subscribers.

That from henceforth, there shall be within the city of Dublin, and suburbs and liberties thereof, one company or fraternity of judicious apothecaries well skilled in preparing and compounding of medicines, to consist of one governor, a deputy governor, and thirteen directors, and the subscribers.

Persons herein named incorporated as herein, they and their successors in perpetual succession.

2. And it is hereby enacted, declared, and constituted, that the said Henry Hunt, Anthony Thompson, John Hastings, Peter Kelly, George Kiernan, Richard Magan, James M'Laughlin, Daniel Moore, John Pentland, Foden Perrin, Robert Powell, Stephen Reynolds, Charles Ryan, John Usher, Richard Usher, and others, apothecaries of the said city of Dublin, are, and from henceforth shall remain one body corporate and company, in matter, deed, and name, by the name of the Governor and Company of the Apothecaries' Hall of the city of Dublin, and them by that name one body politic and corporate, are hereby enacted, made, created, established, and confirmed, and by the same name they and their successors shall have perpetual succession.

Company to have a Seal, and may alter it at pleasure, and may possess all estates and privileges; and purchase, and dispose of all possessions, etc.; and sue and be sued by same name.

3. And be it further enacted by the authority aforesaid, that it shall and may be lawful to and for the said body politic and corporate, by the name of the Governor and Company of the Apothecaries' Hall, to have and use one common seal, for the use, business, and affairs of the said body politic and corporate, and their successors, and to break, alter, and to make anew their seal, from time to time, at their pleasure, and as they shall see cause, and by the same name they and their successors, in all times coming, shall be able and capable in law to have, take, purchase, receive, hold, keep, possess, enjoy, and retain to them and their successors, any manors, messuages, lands, rents, tenements, liberties, privileges, franchises, hereditaments, and possessions whatsoever, and of what kind, nature or quality soever, and also to purchase all goods and chattels whatsoever, and also to sell, grant, demise, alien, and dispose of the same manors, messuages, lands, rents, tenements, liberties, privileges, franchises, hereditaments, and possessions, goods and chattels, or any of them, and that by the same name they and their successors shall and may sue and implead, and be sued and be impleaded, answer and defend, and be answered and defended in Courts of Record, or any other place whatsoever, and before whatsoever judges, justices, officers, and ministers, in all and singular pleas, actions, suits, causes, and demands whatsoever, of what kind, nature, or sort soever, and in as large, ample, and beneficial a manner and form as any other body politic and corporate, or any other liege people of Ireland, being persons able and capable in law, may or can have, take, purchase, receive, hold, keep, possess, enjoy, sell, grant, demise, alien, dispose, sue, implead, defend, or answer, or be sued, impleaded, defended, or answered in any wise, and shall and may do and execute all and singular other matters and things by the name aforesaid, that to them shall or may appertain to do, any law, usage, or custom now existing to the contrary in anywise notwithstanding.

Apothecaries as herein described, on payment of £100 each, declared Members, and entitled to all advantages. Not to consist of more than 60.

4. And be it further enacted by the authority aforesaid, that all such judicious apothecaries resident in the city of Dublin, or within the suburbs or liberties thereof, or who have been heretofore apothecaries resident within the said city, suburbs, or liberties thereof, for the term of seven years, who shall hereafter subscribe a sum of one hundred pounds each respectively, shall be, and they are hereby enacted and declared to be members of the said corporation, and shall be entitled to all the benefits and advantages arising therefrom equally, and in as full and ample a manner as the said original subscribers: provided nevertheless, that the said company shall not at any one time consist of more than sixty members.

There shall be for ever, from time to time, a Governor, etc.

Governor or Deputy Governor and 5 Directors to form a Court of Directors.

Henry Hunt appointed Governor. Anthony Thompson, Dep. Gov. Names of Directors.

To continue in office until 1st Sept. 1792, and until others are chosen and sworn.

5. And for the better ordering, managing, and governing the preparations, stock, or other affairs of the said corporation, and for the making and establishing a continued and perpetual succession of persons to be governors and directors of the said corporation: be it enacted by the authority aforesaid, and it is hereby enacted, ordered, and appointed, that there shall be from time to time for ever, of the members of the said company, a governor, deputy governor, and thirteen directors of and in the said corporation, which governor, deputy governor, and directors, or any five or more of them, of whom the governor or deputy governor, unless as is hereinafter excepted, to be always one, shall be called a court of directors, for inspecting and directing all chemical and compound preparations and experiments, and for ordering, managing, and directing the affairs of the said corporation, and shall have such powers and privileges as are hereinafter mentioned; and Henry Hunt is hereby enacted, constituted, ordained, and appointed the present and first governor, and Anthony Thompson, the present and first deputy governor, and John Hastings, Peter Kelly, George Kiernan, Richard Magan, James M'Laughlin, Daniel Moore, John Pentland, Foden Perrin, Robert Powell, Stephen Reynolds, Charles Ryan, John Usher, and Richard Usher, are hereby enacted, ordained, constituted, and appointed the present and first directors of the said corporation; and the said governor, deputy governor, and directors shall continue in their present respective offices until the first day of September, one thousand seven hundred and ninety-two, and until others shall be chosen in their respective offices and sworn into the same, unless they or any of them shall sooner die or be removed as hereinafter mentioned.

Corporation may assemble as herein.

Notice of Meeting by Summons.

So many as shall be assembled to be called a General Council; after 1st Sept. 1792, Governors, etc., to be chosen on every 1st of August (save as herein) out of the Corporation, for 1 year and until others sworn.

6. And be it further enacted by the authority aforesaid, that it shall and may be lawful to and for all and every of the members of the said corporation or body politic, from time to time, to assemble and meet together at any convenient place or places, until such time as an hall shall be erected in pursuance of this Act, and after the erection of such hall, at the said hall for the choice of the governor, deputy governor, and directors, and for the making by-laws, ordinances, rules, orders, or directions for the government of the said corporation, and for any other affairs or business concerning the same, previous notice thereof being first given by summons in writing, to be served at the place of residence of each member eight days at least before the time appointed for such meeting; and that all the members of the said corporation, or so many of them as shall be so assembled, shall be, and be called a general council of the said corporation, which shall meet and assemble at such times and in such manner as hereinafter mentioned; and that all succeeding governors and directors of the said corporation shall, from and after the first day of September, one thousand seven hundred and ninety-two, be chosen on every first day of August, except the same shall happen to fall on Sunday, and then in such case on the Monday next following such Sunday, for ever, out of the members of the said corporation, by the majority of votes of all and every the members of the said corporation who shall be personally present at such elections, which succeeding deputy governor and directors shall be severally and respectively elected for one year, and until others shall be duly chosen and sworn into their places respectively.

In cases of Death, etc., Corporation

7. Provided always nevertheless, that in case of death, avoidance, or removal of the governor, deputy governor, or any of the directors of the said corporation for the time being, the survivors of them, or the majority of them

remaining in their offices, shall and may at any time assemble together the members of the said corporation, in order to elect other persons in the room of those dead, removed, or avoided.

may assemble and elect as herein.

Governors and Deputy Governors to take the following Oath or Affirmation: Oath.

8. Provided always nevertheless, and it is hereby enacted, that the said Henry Hunt, hereby nominated to be the first governor, and every person hereafter to be chosen to the offices or trust of governor or deputy governor of said corporation, shall not be capable of acting or executing the said office or trust until he or they shall have taken the following oath or affirmation:—

"I, *A. B.*, being nominated or elected to be governor or deputy governor [*as the case shall be*] of the company of the apothecaries' hall of Dublin, do promise and swear or affirm [*as the case shall be*], that I will to the utmost of my power, by all lawful ways and means, endeavour to support and maintain the body politic of the governor and company of the apothecaries' hall of Dublin, and the liberties and privileges thereof, and that I will in all things faithfully and honestly execute the trust reposed in me as governor or deputy governor, according to the best of my skill and knowledge. So help me God."

Persons by whom said Oath may be administered.

Which oath of the first and present governor and deputy governor above named, shall and may be administered by the Chancellor of the kingdom of Ireland, or the Keeper or Commissioners of the Great Seal of Ireland, or by the Chancellor or Chief Baron of the Court of Exchequer in Ireland, or any of them for the time being, and to and from any future governor, shall and may be administered and received by the Chancellor of the kingdom of Ireland, or by the Keeper or Commissioners of the Great Seal of Ireland, or by the Chancellor or Chief Baron of the Court of Exchequer in Ireland for the time being, or by the governor of the said corporation, or in his absence by the deputy governor for the last preceding year; and the said Chancellor of the kingdom of Ireland, and the Keeper or Commissioners of the Great Seal of Ireland, the Chancellor or Chief Baron of the Court of Exchequer in Ireland, or any of them for the time being, and such preceding governor or deputy governor is hereby authorized, empowered, and required to administer and receive the said oaths, to and from every and any such person appointed or elected to be governor or deputy governor of the said corporation.

Directors not to act until they shall have taken the following Oath:

9. Provided always, and it is hereby enacted, that none of the said John Hastings, Peter Kelly, George Kiernan, Richard Magan, James M'Laughlin, Daniel Moore, John Pentland, Fodin Perrin, Robert Powell, Stephen Reynolds, Charles Ryan, John Usher, and Richard Usher, hereby nominated, constituted, and appointed the first directors of the said corporation, or any person or persons hereafter to be chosen to the office or trust of a director of said corporation, shall be capable to execute or act in the said office of a director at any time or times hereafter until he or they shall respectively have taken the following oath or affirmation, as the case may require, to wit:—

Oath.

"I, *A. B.*, do swear or affirm, that in the office of director of the corporation or company of the apothecaries' hall of Dublin, I will give my best advice and assistance for the support and good government of the said corporation, and that I will diligently, faithfully, and honestly execute the trust reposed in me as a director, according to the best of my skill and knowledge."

Persons by whom said Oath may be administered.

Which oath or affirmation to the directors herein before nominated, and every of them respectively, shall and may be administered by the said Chancellor of Ireland, or the Keeper of the Great Seal, or by the Chancellor or Chief Baron of the Exchequer of Ireland, or by the first governor, or in his absence by the first deputy governor, being first sworn as before mentioned; and the said oath to any future director or directors shall and may be administered by the Chancellor of Ireland, or by the Keeper or Commissioners of the Great Seal of Ireland, or by the Chancellor or Chief Baron of the Court of Exchequer in Ireland for the time being, or any of them, or by a sworn governor of the said corporation for the time being, or in his absence by a sworn deputy governor for the time being, or by the governor or deputy governor for the preceding year, who, or any of them are hereby authorized and required to administer the said oath or affirmation to every director or directors, from time to time accordingly.

Every Member to make Oath as hereafter.

10. Provided also, and it is hereby enacted, that all and every the other members of the said corporation shall, before he or they severally shall be capable to give any vote in any general court of the said corporation, make and receive the oath or affirmation [*as the case may require*] following, that is to say:—

Oath.

"I, *A. B.*, do swear or affirm that I will be faithful to the governor and company of the apothecaries' hall of Dublin, whereof I am a member, and in all general courts when and so often as I shall be present will, according to the best of my understanding, give my advice, council, and assistance, for the support and good government of the said corporation, and that I will not take an apprentice for a shorter term than that of seven years, and that I will not knowingly or willingly buy or retail any contraband goods. So help me God, Amen."

Said Oath to be administered by Persons authorized to administer former Oaths.

Which oath or affirmation is to be administered by, and made before the several persons respectively authorized and empowered to administer the several oaths or affirmations herein before respectively appointed as aforesaid, and which persons are hereby respectively authorized, impowered, and required to administer the same.

The Court of Directors may administer the following Oath to all their Agents or Servants: Oath.

11. And be it further enacted by the authority aforesaid, that the said court of directors shall have power and authority, and they are hereby empowered, authorized, and required to administer an oath or affirmation to all inferior agents or servants that shall be employed by the said corporation, for the faithful and due execution of their several places and trusts in them reposed, in the words or to the effect following, that is to say,

"I, *A. B.*, being elected to the office or place of   to the governor and company of the apothecaries' hall of Dublin, do swear or affirm [*as the case may be*], that I will be true and faithful to the said governor and company, and will faithfully and truly execute and discharge the said office or place of   to the utmost of my skill and power. So help me God."

If a Governor or Director shall neglect to take the Oath appointed, 10 days after Election, Office shall become vacant.

And in case any person hereby nominated or hereafter to be elected governor, deputy governor, or director, as aforesaid, shall for the space of ten days after the passing of this Act, or after such election, neglect or refuse to take or make the respective oaths hereby appointed to be taken and received as aforesaid, or shall refuse to take upon him, his or their offices, that then and in such case, the office and place of every such person so neglecting or refusing shall become vacant, and others be chosen in their places by a general court of the said subscribers.

Governor to summon 4 general Courts a year, as herein; in failure, 5 Directors may call a general Court as herein.

12. And be it further enacted by the authority aforesaid, that the governor shall from time to time, and he is hereby required duly to summon and appoint four general courts at least in every year, whereof one to be held on the first of August, one on the first of November, one on the first of February, and one on the first of May, in every year; and if at any time or times there shall be a failure of holding a general court in any of the said months, that then and so often, and in every such case, it shall and may be lawful for any five or more of the directors of the said corporation, who are hereby empowered and required, to summon and call a general court, which shall meet and be holden in the month next coming after the month in which the same should have been holden, upon the summons of the governor as aforesaid.

Governor or Dep. Gov. to call a general Court, upon demand being made as herein; in default, 5 Directors may call such Court on 10 days' Notice, and do Business, and hear Com-

13. And it is hereby further enacted, that the said governor for the time being, or in case of his absence the deputy governor, shall from time to time, upon demand to him for that purpose made in writing, and signed by any five or more members of said corporation, within ten days after such demand, summon and call a general court of the members of said corporation; and in default of the governor or deputy governor to call such court, that then it shall and may be lawful to and for the said five or more members, giving ten days' previous notice thereof by summons in writing, to be left at the place of residence of each member, to summon and hold a general court, and there to do and dispatch any business relating to the government or affairs of the said corporation, and to hear and debate any complaint that shall be made against any governor, deputy governor, or director, for mismanagement of his

or their respective offices; and if such governor, deputy governor, or directors, shall not clear himself or themselves of such complaint, to the satisfaction of the major part of the members of the said corporation in the said general court assembled, that then within ten days another general court shall be called, finally to determine same by the majority of their votes as aforesaid, who may remove or displace all or any of the governor, deputy governor, or directors, for such misdemeanours or abuse of their offices, and elect and choose others in his or their room, in the same manner as the said elections are hereinbefore directed to be made; and in every case where any governor, deputy governor, or director, shall happen to die or be removed, or his office shall otherwise become void before the expiration of the time for which he shall have been elected, it shall and may be lawful for the major part of the members of the said corporation assembled in a general court, to elect and choose any other member of the said corporation into the office of such governor, deputy governor, or director, that shall so die or be removed, or whose office shall become void, which person so to be chosen shall continue in the said office until the next usual time hereby appointed for election, and until others shall be duly chosen and sworn.

plaints; if Governor, etc., shall not acquit himself, another Court to be called within 10 days to determine; Governor, etc., may be removed for Abuse of Office; if a Governor, etc., shall die or be removed, another member shall be chosen to the Office.

14. And for the better ordering and managing the affairs of the said corporation, it is hereby enacted by the authority aforesaid, that it shall and may be lawful for the said governor, deputy governor, and directors, for the time being, or any five or more of them, of which the governor or deputy governor to be always one, except as hereinafter mentioned, from time to time, and at all convenient times to assemble and meet together at any convenient place or places, until such hall shall be erected, and afterwards at such hall for the direction or management of the affairs and business of the said corporation, and then and there to hold courts of directors for the purposes aforesaid, and to summon general courts to meet as often as they shall see cause; and that the said governor, deputy governor, and directors, or the major part of them so assembled, whereof the governor or deputy governor is to be always one, except as hereinafter mentioned, shall and may act according to such by-laws, constitutions, orders, rules, or directions, as shall from time to time be made and given unto them by the general court of the said corporation; and in all cases where such by-laws, constitutions, orders, rules, or directions, by or from the general court shall be wanting, the said governor, deputy governor, and directors, or the major part of them so assembled, whereof the governor or deputy governor shall be always one, except as hereinafter mentioned, shall and may direct and manage all the affairs and business of the said company, and choose agents and servants, which shall from time to time be necessary to be employed in the affairs and business of the said company, and allow and pay reasonable salaries and allowances to the said agents and servants respectively, and them or any of them from time to time to remove or displace as they shall see cause, and generally to act and do in all matters and things whatsoever, which they shall judge necessary for the well ordering and managing of the said company and the affairs thereof, and to do, enjoy, perform, and execute all the powers. authorities, privileges, acts, and things in relation to the said company, as fully to all intents and purposes as if the same were done by the governor, deputy governor, and company of the apothecaries' hall, or by a general court of the same.

Governors and Directors, or any 5 of them, may meet at any convenient place until a hall is erected; afterwards at such hall, there to transact Business as herein.

Where By-Laws are wanting, Governors and Directors may manage as herein;

and execute all Powers, etc., as if the same were done by the Governor, Dep. Gov. and Comp.

15. Provided nevertheless, and it is hereby further enacted, that when any general court or courts of directors of the said company shall be assembled, according to due summons or appointment, in case the said governor and deputy governor shall be absent from such meeting one hour after the time appointed in such summons or appointment for the proceeding to business, or sooner if the said governor and deputy governor shall signify by writing that they are incapacitated from attending said meeting by sickness or otherwise, that then and in every such case it shall and may be lawful for every such general court and courts of directors respectively, to choose a chairman for that time only, and to proceed to business, and to transact the affairs of the said company, and that the transactions of the said general court of directors

When the Governor Dep. Gov. shall be absent as herein, a Chairman may be chosen for that time only.

Transactions

of said Court valid if there be 5 Directors present.

shall be as valid and effectual to all intents and purposes as if the said governor or deputy governor had been present, so that in every such court of directors there be five directors present, anything hereinbefore contained to the contrary in anywise notwithstanding; and every such chairman so to be chosen shall have the like privileges and authority in all respects, as the governor or deputy governor might have or exercise if he were present.

Sworn Members at a General Court, consisting of not less than 15, may make By-Laws; By-Laws not to be repugnant to the Laws of the Kingdom; nor for Composition of Medicines without Approbation of the College of Physicians. Salaries to Governor, etc. Governor, Dep. Gov. or Chairman not to vote but when Votes are equal.

16. And it is hereby further enacted, that it shall and may be lawful for all members, having first taken the oaths, or being first duly affirmed as hereinbefore directed, at their general court as aforesaid, the said court to consist of at least fifteen members, to make and constitute such by-laws and ordinances for and relating to the affairs and government of the said company, and the imposing mulcts and amerciaments upon the offenders against the same, as to them shall seem meet, so as that such by-laws be not repugnant to the laws of the kingdom of Ireland, and so as that no by-law, statute, or ordinance for or concerning the composition of medicines shall be made without the approbation of the College of Physicians, by writing under the college seal first had and obtained, all which mulcts and amerciaments shall and may be received and recovered to the only use and behoof of the said governor, deputy governor, and company of the apothecaries' hall of Dublin, and their successors for ever, without any account or other matter or thing to be thereof rendered to his Majesty, his heirs and successors, and also to allow such salaries to the governor, deputy governor, or directors, as to them shall seem meet; provided also nevertheless, that no governor, deputy governor, or chairman in the absence of any governor or deputy, shall have any vote in a general court or courts of directors, save where there shall happen to be an equal number of votes.

Notice of intention to withdraw, to be given at a General Meeting; a judicious Apothecary resident in Dublin, may purchase such member's shares; transfers, etc., to be entered as herein; Form of entry; if the person assigning be not present, entry to be made as herein; Form of entry.

17. And be it further enacted by the authority aforesaid, that when and so often as any member of said corporation shall wish to withdraw from the same, and transfer his share of the stock or fund of said corporation, that he shall give notice thereof at a general meeting of said corporation, in writing under his hand and seal; and thereupon it shall be lawful for any judicious practising apothecary resident within the city of Dublin, or the suburbs or liberties thereof, to purchase the share of such member, and all such transfers and assignments of the share or shares of such capital stock shall be by an entry in a book to be kept for that purpose, signed by the party so assigning or transferring, in the words and to the effect following, that is to say:—

"Memorandum, That I, *A. B.*, this day of in the year of our Lord do assign and transfer my interest or share in the capital stock or fund of the governor and company of the apothecaries' hall of Dublin, and all benefits arising thereby, unto his executors, administrators, and assigns. Witness my hand."

Or in case the person assigning be not personally present, then by an entry in the said book, signed by some person thereunto lawfully authorized by letter of attorney, or writing under hand and seal, attested by two or more creditable witnesses, in the words following, to wit:—

"Memorandum, that I, *A. B.*, this day of in the year of our Lord by virtue of a letter of attorney, or authority under hand and seal of dated the day of in the year of our Lord do in the name and on the behalf of the said assign and transfer the interest or share of the said in the capital stock or fund of the governor and company of the apothecaries' hall of Dublin, and all benefit arising thereby unto his executors, administrators, and assigns. Witness my hand."

Transfer to be signed by the person to whom made; such entry to be the only manner of transferring stock;

Under which transfer the person to whom such assignment or transfer shall be made shall sign his name, attesting that he does voluntarily accept the same, and the entry signed as aforesaid shall be the only manner and method used in passing, assigning, or transferring the interest or share in said capital stock or fund; and when any member of said corporation shall die, notice thereof being given at a general meeting of said corporation, it shall and may be lawful for any judicious practising apothecary resident within the city of

Dublin, or the suburbs or liberties thereof, who shall be so minded to purchase the share of such deceased member, upon paying the personal representative of such deceased member the full value of the share of such deceased member, and entry thereof shall be made in the book or books to be kept for that purpose, which shall contain the abstract of the probate of the will, or letters of administration under which said representative acts, and also a receipt for the purchase money, to be signed by such personal representative, or by some person for that purpose thereunto lawfully authorized; and all such transfers shall be good and available in law, and convey the whole estate and interest of the person so transferring or ordering the same to be transferred.

upon the death of a member, an Apothecary may purchase as before; value to be paid to the representative; entry to be made as herein; all such transfers good in law.

18. And inasmuch as many dangerous and fatal consequences have heretofore arisen from the practice of taking as apprentices to the art and mystery of an apothecary, boys or persons disqualified by the want of proper education, to prepare or vend medicine, not being capable of learning their nature, difference, effects, and qualities, to the imminent hazard of the lives of his Majesty's faithful and loyal subjects, be it enacted by the authority aforesaid, that from and after the twenty-fourth day of June, in the year one thousand seven hundred and ninety-one, no person or persons shall be received, taken, indented, or employed as an apprentice, foreman, or shopman to any apothecary throughout the kingdom of Ireland, until he or they shall be examined by the governor or deputy governor and directors of the apothecaries' hall of Dublin, any five to make a quorum, who are hereby authorized and required to examine into the education and qualifications of such person or persons who shall apply to them for that purpose, and the majority of such examiners are hereby authorized and empowered after such examination to certify that such person or persons so applying to them, as shall appear to such examiners properly qualified to become an apprentice or apprentices, journeyman or journeymen, to learn or transact the business of an apothecary, in the manner or to the effect following, that is to say:—

From 24th June, 1791, no apprentice, foreman, or shopman to be taken to any apothecary until he shall be examined as herein; majority of examiners to certify as herein;

"To all to whom these presents shall come greeting, know ye, that we, the governor, deputy governor, and directors of the apothecaries' hall of Dublin, have this day duly and carefully examined *A. B.*, the son of *C. D.*, of, or late of [*as the case may be*], in the county of and we think him properly educated or qualified to become an apprentice or journeyman [*as the case may be*] to learn or transact the business of an apothecary, and we do hereby certify the same. Given under our seal, the day of in the year of our Lord ."

Form of certificate.

19. Provided nevertheless, that if such examiners, or the major part of them, shall see cause to refuse such certificate to any person applying to become an apprentice or shopman, yet it shall and may be lawful to and for such person or persons who shall be so refused, to apply at any future time, so as the same be not within six months of such first examination, to be again examined; and if on such second examination he shall appear to the examiners, or the major part of them, to be then properly qualified, it shall and may be lawful for said examiners, or the major part of them, to grant such person so applying such certificate as hereinbefore mentioned.

Persons refused a certificate may be again examined, after 6 months; if then qualified, a certificate may be granted.

20. And it is further enacted by the authority aforesaid, that it shall and may be lawful for every person who shall consider himself aggrieved by the judgment or determination of the said examiners, or the major part of them, within ten days after such second determination, to appeal to the general council of the said company, or subscribers at large, and the governor, or in his absence the deputy governor, is hereby empowered and required thereupon to summon a general council, which shall proceed to examine the person so applying, and shall, as they or the major part of them shall see cause, affirm or reverse the judgment of such examiners, not less than fifteen members of said company being present; and if the members of said company, or the major part of them, on such re-examination shall be of opinion to reverse the determination of the examiners, then that it shall and may be lawful for the members of said company, or the major part of them present at such re-examination, to grant to the person applying such certificate as before men-

After second examination, person aggrieved may appeal within 10 days to the general Council, or Subscribers at large; General Council to affirm or reverse judgment, 15 members present; if a reversed, certificate to be granted as before mentioned.

tioned and the same so granted shall be as good, valid, and effectual in law, to all intents and purposes, as if the same had been granted by the examiners in the first instance.

Oath to be taken by examiner.

21. Provided also, that before any person shall act on any such examination or appeal, such person shall take the following oath or affirmation [*as the case may be*] :—

"I, *A. B.*, do sincerely promise and swear [*or affirm*] that I will faithfully, impartially, and honestly, according to the best of my skill and knowledge, execute the trust reposed in me as an examiner on the examination of *C. D.*, and that without favour or affection, prejudice, or malice. So help me God."

Examiners to administer oath to each other.

Which oath or affirmation any five or more of the examiners on their first examination, or on any appeal, are hereby authorized and required to administer to each other.

From 24th June, 1791, no person to open shop, or act as an apothecary, until he shall be examined, as before; Examiners to take oath as before, and grant or refuse a certificate; like remedy of appeal.

22. And be it further enacted by the authority aforesaid, that from and after the twenty-fourth day of June, in the year of our Lord one thousand seven hundred and ninety-one, no person shall open shop, or act in the art or mystery of an apothecary within the kingdom of Ireland, until such person shall have been examined as to his qualification and knowledge of the business by such persons and in such manner as hereinbefore mentioned and required for the examination of persons applying to become apprentices or shopmen; which examiners shall take the oath before mentioned in manner as hereinbefore required, and shall grant or refuse to the person so applying for a certificate to open a shop, or follow the art and mystery of an apothecary within the kingdom of Ireland, with the like remedy of appeal as hereinbefore mentioned.

Person intending to open shop may appeal to the College of Physicians; they may affirm or reverse the judgment of examiners, 5 Fellows to be present; a certificate may be granted as before; Examiner's oath to be taken.

23. And be it enacted by the authority aforesaid, that if after such examination by the general council or subscribers at large, such person so intending to open shop shall think himself aggrieved, that it shall and may be lawful for such person, within eight days after such determination, to appeal to the King and Queen's College of Physicians in Ireland, who shall proceed to re-examine the person so applying, and shall, as they or the major part of them shall see cause, affirm or reverse the judgment of such examiners, not less than five fellows of the said college being present; and if the members of said college, or the major part of them, on such re-examination shall be of opinion to reverse the determination of the examiners, then that it shall and may be lawful for the members of the said college, or the major part of them present on such examination, to grant to the person so appealing such certificate as hereinbefore mentioned, and the same so granted shall be as good, valid, and effectual in law to all intents and purposes, as if the same had been granted by the examiners in the first instance: Provided always, that before any fellow of said college shall examime on such appeal, he shall take the examiner's oath hereinbefore mentioned.

Apothecaries may be present at examinations; 10*s*. for every certificate to open shop; and 5*s*. for a certificate to become an apprentice, etc., for the benefit of the Company.

24. Provided also, that it shall and may be lawful for all apothecaries to be present at every such examination, and that every such person for every such certificate to open shop, shall pay a sum of ten shillings and no more; and for every person for a certificate to become an apprentice or journeyman to an apothecary, the sum of five shillings and no more; which sums shall be and enure to the sole use and benefit of the said company of the apothecaries' hall of Dublin.

From 4th June, 1791, no Apothecary to take an apprentice for less than 7 years.

25. And be it enacted by the authority aforesaid, that from and after the twenty-fourth day of June, in the year of our Lord one thousand seven hundred and ninety-one, no apothecary within the kingdom of Ireland shall have, take, receive, indent, or hire any apprentice to learn the art and mystery of an apothecary for a lesser time or term than seven years from the day of the date of such indenture, article, minute, memorandum, or agreement, and every such indenture, article, minute, memorandum, or agreement, shall bear date really and truly the day of such indenture, article, minute, memorandum, or agreement, shall be signed, executed, or entered into.

No Apothecary to take

26. And be it further enacted by the authority aforesaid, that if any apothecary within the kingdom of Ireland shall, after the twenty-fourth day of

June, in the year aforesaid, have, take, indent, receive, or hire any person or persons as an apprentice or as a shopman, journeyman, foreman, overseer of his shop, or manager of his business as an apothecary, or shall open shop or wareroom for the retail of medicine, or practise the art and mystery of an apothecary within the kingdom of Ireland, without such person or persons having obtained the proper certificate for that purpose hereinbefore directed; or shall take any apprentice for less time than seven years, whose indentures shall be enrolled in a book to be kept for that purpose by this corporation, for which the sum of one shilling shall be paid, such person so offending shall for every such offence forfeit the sum of twenty pounds, to be recovered by the governor and company of the apothecaries' hall of Dublin, by action of debt, suit, plaint, or information, in any of his Majesty's courts at Dublin, wherein no essoign, protection, privilege, injunction, wager of law, or stay of prosecution by *non vult ulterius prosequi*, shall be admitted or allowed, or any more than one imparlance, and the sums so recovered shall be and enure to the use of the said company.

an apprentice, shopman, etc., without a certificate; or take an apprentice for less than 7 years; indentures to be enrolled as herein; penalty £20. Sums recovered to go to the use of the Company.

27. And provided also, that nothing herein contained shall extend or be construed to extend to any apprentice or shopman, or apothecary's foreman, or owner of the shop, or manager in or about the business of an apothecary as aforesaid, who shall appear to have been really and *bonâ fide* taken, received, indented, or hired, or to have opened shop before the passing of this Act.

Not to extend to apprentices, shopmen, owners of shops, etc., who were really so before the passing of this Act.

28. And be it further enacted by the authority aforesaid, that no apothecary within the kingdom of Ireland, from the twenty-fourth day of June, one thousand seven hundred and ninety-one, shall grind, compound, sell, or keep any arsenic, oils, or colours for painters' use, in the shop or room wherein he compounds medicines, under a penalty of five pounds, the same to be forfeited, and go to the use and fund of the governor and company of the apothecaries' hall of Dublin, to be recovered by them in the same manner, and with the like restrictions as the other penalties under this Act.

Arsenic, oils, or colours not to be kept where medicines are compounded, penalty £5.

29. And be it enacted by the authority aforesaid, that this Act shall in all courts and places be deemed and taken to be a public Act, and shall be judicially taken notice of by all judges, justices, and courts whatsoever, without specially pleading the same.

A public Act.

30. And be it further enacted by the authority aforesaid, that every apothecary, druggist, or other such person selling any quantity less than one pound weight of arsenic, shall at the time of such sale, and before delivering, enter in a book to be kept for that purpose, the quantity sold, and the time when it was so sold, to which entry the person buying shall sign his or her name, addition, and place of abode; or in case such person so purchasing cannot write, the name, addition, and place of abode of such person being first written, such person shall set his or her name thereto, and the same shall be attested by such apothecary or druggist, or some other person present; and in case such apothecary or druggist shall not know the person buying to be of such name, or place of abode, then such apothecary or druggist shall not deliver such arsenic until it shall be certified to him by some person known to such apothecary or druggist, that the person buying is the same as he or she describes himself or herself to be; and in case any apothecary or druggist selling arsenic shall fail herein, he or she shall forfeit the sum of twenty pounds, to be recovered as hereinafter mentioned.

Persons buying and selling less than one pound of arsenic to enter and sign as herein.

Arsenic not to be sold to persons not known.

Penalty £20.

31. And be it further enacted by the authority aforesaid, that in case any mischief shall arise to the person or property of any individual by means of such arsenic so sold, and that such apothecary or druggist so selling shall happen to die, then and in such case such book shall be received as evidence in any court criminal or civil in this kingdom, of the sale and delivery of such arsenic to such person so signing, upon any trial to be had at law respecting such mischief, the handwriting of such person so signing being first proved in the usual way.

If mischief shall arise by arsenic so sold, and the Apothecary to die, such book to be received as evidence.

CHAPTERS FOR STUDENTS.

BY WILLIAM A. TILDEN, B.SC. LOND.,
DEMONSTRATOR OF PRACTICAL CHEMISTRY TO THE PHARMACEUTICAL SOCIETY.

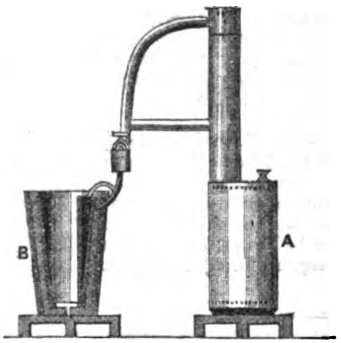
HEAT (*continued*).

19. Possibly the following considerations will make the assertion of the last paragraph more clear. Suppose we find that 1 gram of the metal lithium, in the process of having its temperature raised from 32° F. to 212° F., consumes 9408 units of heat, and that 1 gram of the metal sodium, in going through the operation, consumes 2934 of the same units. To raise the temperature of 7 grams (one atom) of lithium to the same degree, would, of course, require seven times as much heat as would be required for 1 gram, or, $9408 \times 7 = 65,856$ units. And so also to raise the temperature of 23 grams (one atom) of sodium to the same degree would require twenty-three times as much heat as would be necessary for 1 gram, or, $2934 \times 23 = 67,482$ units. These two quantities, 65,856 and 67,482, are very nearly equal, and this establishes the proposition.

20. Any influence which changes the density of a body, that is, which alters the distance between its particles, causes a change in the specific heat of the body. Elevation of temperature causes expansion, and, therefore, increase of specific heat; depression of temperature causes contraction, and, therefore, decrease of specific heat. Compression by mechanical means also causes diminution of specific heat. When a solid body is melted a sudden increase of specific heat is usually observable, but when a liquid is converted into a gas the specific heat again diminishes. The specific heat of water is twice that of ice, and more than twice that of steam. These facts help to explain the slight differences in the observed atomic heats.

21. Ice is now an article of manufacture. It is prepared on a small scale by immersing a thin metallic vessel containing the liquid to be frozen in a mixture of various soluble salts mixed with water or other liquid. As the salts dissolve in the water, that which was previously a solid mass is converted into a liquid; whilst this change is going on heat is passing into the saline liquid from everything in contact with it; the containing-vessel with the water are most easily accessible, and are, therefore, rapidly deprived of part of their heat; if the process is successful, so much heat is removed from them to the cooling mixture, that the temperature is reduced below the freezing-point, and ice is the result.

On the large scale, ice is made by causing some very volatile liquid to evaporate rapidly, and so arranging the apparatus that the evaporating liquid may be in contact with the vessel containing the water whose temperature it is desired to reduce. The accompanying drawing represents Carré's ice-machine. It consists of a still, containing strong solution of ammonia, connected, gas-tight, with a cylindrical box, which serves as the condenser. Heat applied to the body of the still causes most of the ammoniacal gas to be driven over, and condense with a little water in the receiver, which is kept cool. As soon as the whole of the ammonia is expelled from A, communication between retort and receiver is cut off by means of a stop-cock, the fire is withdrawn, and water is introduced into the hollow space in the condensing box. When the retort is cold, it is immersed in cold water, the stop-cock is again opened, and the liquefied ammonia in B boils rapidly and is reabsorbed in A. In doing this, the ammonia carries away so much heat



from the water B, that it freezes. The heat which is taken up in this manner, when a body changes from solid to liquid or from liquid to gas, is called heat of liquefaction, heat of vaporization, or frequently 'latent heat.'

22. The heat which becomes latent in a liquid formed by the melting of a solid, is given out, undiminished in amount, when it reverts to the solid state. The heat which becomes latent in the vapour produced by the volatilization of a liquid, is also given out when the vapour condenses to the liquid form again. The heat which thus enters into combination with the body produces no effect upon its temperature, it merely changes its physical state; therefore, ice at 32° + latent heat = water at 32°; also water at 212° + latent heat = steam at 212°.

23. The foregoing examples and considerations thereupon will explain many commonly-occurring phenomena. When pounded ice is mixed with salt, the whole liquefies from the mutual chemical attraction of the salt and water; intense cold is the result. If ether is allowed to evaporate from the hand, a sensation of cold is produced; the ether in undergoing the change of condition flies off with heat from the hand.

If the hand be held in the steam issuing from a kettle, scalding results. The steam in condensing from the vaporous to liquid state gives out all the heat which it had held latent, and this heat is sufficient to cause a burn.

If the experiment be made of mixing together cold saturated solutions of sulphate of magnesia and carbonate of soda, the quantity of precipitate formed is so great that the whole becomes a nearly solid mass; at the same time it becomes perceptibly hot; at least the greater part of the heat so becoming sensible is the result of the change from liquid to solid. When ice is caused to melt by the application of heat, the water formed retains precisely the same temperature, 32° F., until the last of the solid water has been converted into liquid. The heat as it goes in is totally consumed in effecting the change of state. Similarly, water boiling in a metallic vessel retains a uniform and not increasing temperature; all the heat supplied to it from without being employed in changing it into steam.

24. Conversion of a liquid into vapour may take place in two ways; either by "evaporation" from the surface only, or by "ebullition," or boiling. A liquid is said to boil when bubbles of vapour are formed in the body of the liquid and rising to the surface burst there.

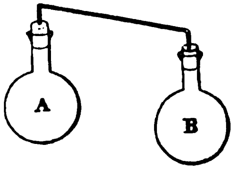
25. These bubbles can only be formed when the heat applied is sufficient to give the vapour an expansive power (sometimes called tension) sufficient to overcome the weight of the atmosphere superincumbent upon the surface of the liquid. In the ordinary state of the atmosphere, this pressure is such that one square inch of surface is pressed upon by a pressure equal to about 15 pounds. Under this pressure water boils at 212° F., or 100° C.

If a small box containing some water were constructed with a stopper or valve, having an area of 1 square inch, and upon this a weight of 15 pounds were placed, and the apparatus then placed in a vacuum, the vapour would just lift the valve when the water had been heated to 212° F.

If instead of working the apparatus in a vacuum it were heated in the air, the addition of the atmospheric pressure would render it necessary to raise the temperature to about 250° F. in order to lift the valve, which would now be under a weight of about 30 pounds. Pressure, therefore, raises the boiling-point.

26. On the other hand, removal of pressure, atmospheric or other, lowers the boiling-point of a liquid. On this account evaporations and distillations are often conducted in a partial vacuum, in cases where the application of much heat is undesirable, as in making medicinal extracts.

A small apparatus for distillation may easily be constructed with the aid of two globular flasks, fitted with india-rubber stoppers and a piece of glass tubing to connect them. The liquid may be introduced into A, and heat applied till steam issues from the extremity of the tube, when B may be attached and securely closed. So long as B is kept cool by a stream of water, a very little heat applied to A will suffice to keep up the ebullition.



27. The temperature at which a liquid boils varies slightly, according to the nature of the vessel in which the operation is performed; but the temperature of the vapour given off is uniform, provided the atmospheric pressure remains the same. Boiling-points are, therefore, taken by allowing the bulb of a thermometer to approach very near to the surface of the boiling liquid, but not to dip into it. All preceding remarks upon vapours hold good only so long as they are in contact with an excess of the liquid from which they have been formed. Dry vapours are influenced by heat, in the same manner as the nominally permanent gases.

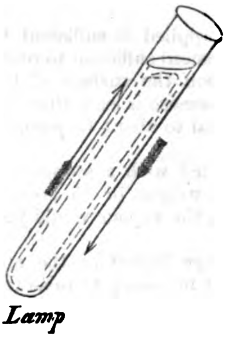
28. When heat has been generated in a body, or has been received from some other body, that portion which goes to raise its temperature, or which constitutes what is sometimes called its sensible heat, is disposed of in one or more of several ways.

Imagine a red-hot ball supported upon an iron tripod. Its temperature rapidly falls as heat passes out of it. The heat travels away by three different routes; the tripod "conducts" a considerable portion away to the table or floor; placing the hand or a thermometer a few inches from the side of the ball, a certain portion will be found thrown off by "radiation," whilst a larger amount is carried upwards by "convection" as well as by radiation.

29. Conduction of heat is effected most perfectly by solids, and of these by the metals. Liquids conduct very imperfectly, and gases so slightly as to be imperceptible.

Radiation of heat takes place through space, in straight lines, and in all directions equally.

Convection (from *conveho*) means conveying. The air in contact with the hot surface receives heat,—its temperature is raised, it expands, rises, and when it comes in contact with the hand or thermometer above, gives up the heat it has received, and returns to its former state. Convection may easily be witnessed by applying heat to a test-tubeful of liquid, holding in suspension a precipitate. The currents established will be visible by the motion of the precipitate in the direction of the arrows.



Radiant heat when it strikes upon a surface, whether solid, liquid, or gaseous, may suffer various modifications. It may be reflected, that is cast off again, without sensible change or diminution. Or it may be absorbed; that is, it may warm the body and change its volume or physical state. Or it may be transmitted by or through the body without changing its temperature or condition.

CHEMICAL NOTES TO THE PHARMACOPŒIA (*continued*).

N.B. The formulæ printed in the Pharmacopœia in thick type will be those only which are referred to in the following pages. The formulæ in thinner

Roman type will not, as a rule, be alluded to. Literal quotations from the Pharmacopœia will appear in brackets, thus [§].

Acetum. *Vinegar.*—An impure dilute acetic acid prepared from malt. Malt is barley, of which the starch has been changed into glucose (grape-sugar) and dextrine, by allowing it to germinate and then drying it. An infusion of malt allowed to ferment gives alcohol and carbonic acid gas; the latter escapes, whilst the former, exposed to atmospheric oxygen, changes slowly into acetic acid. British vinegar is thus made, and is employed in the Pharmacopœia. On the Continent, vinegar is made by the acetification of certain kinds of wine. In whatever way it is made, the acetic acid of vinegar results from the substitution of an atom of oxygen in place of two atoms of hydrogen in alcohol:—

$$\underset{\text{Alcohol.}}{C_2H_6O} + \underset{\text{Oxygen.}}{O_2} = \underset{\text{Acetic Acid.}}{C_2H_4O_2} + \underset{\text{Water.}}{H_2O}$$

The process is accelerated by the growth of a spongy fungoid organism, which appears to act by first absorbing the oxygen from the air and then giving it up to the alcohol. Pure spirit of wine is not converted into acetic acid by exposure to the air.

The B.P. vinegar contains 4·6 per cent. of acetic anhydride, $C_4H_6O_3$, corresponding to 5·4 per cent. of acetic acid, $C_2H_4O_2$. Ten minims of the solution of chloride of barium are sufficient to remove from a fluid ounce the whole of the $\frac{1}{1000}$th of sulphuric acid allowed by law. If, on the further addition of the test, more sulphate of baryta were thrown down, it would indicate adulteration. Sulphuric acid is supposed, though doubtfully, to prevent "mothering" of the vinegar. Sulphuretted hydrogen causes no precipitate in pure vinegar, showing the absence of metals, such as copper and lead.

Acidum Aceticum. *Acetic Acid.*—The crude, *pyroligneous* acid, is made by destructive distillation of wood in iron retorts. Tar, a watery liquid, and gas are the three products of the operation. The watery liquid drawn off and distilled gives at first wood naphtha (impure methylic alcohol) in the receiver; afterwards, acetic acid contaminated with tar passes over and is collected separately.

The purified acetic acid of the Pharmacopœia is made by neutralizing the impure acid with chalk or lime, decomposing the clear solution with carbonate of soda, which gives, by double decomposition, acetate of soda, and purifying this by heating it in the dry state and crystallizing from water. Pure acetate of soda, distilled with sulphuric acid, gives acetic acid in the receiver, sulphate of soda or a mixture of acid and neutral sulphate is the residue left in the retort:—

$$NaC_2H_3O_2 + H_2SO_4 = HC_2H_3O_2 + NaHSO_4.$$

One molecule of sodic acetate and one of sulphuric acid, give one molecule of acetic acid, and one of the acid double sulphate.

18·2 grams of the acetic acid, B.P., require, for neutralization, 100 cubic centimetres of the volumetric solution of soda. This indicates 33 per cent. of real acetic acid, $C_2H_4O_2$.

The calculation is made thus,—the vol. sol. of soda is made of such strength that 1000 cubic centimetres of it contain one molecule, or 40 grams of NaHO. This quantity will, therefore, neutralize one molecule or 60 grams of acetic acid:—

Na . . . 23		$C_2 = 12 \times 2 = 24$
H . . . 1		$H_4 = 1 \times 4 = 4$
O . . . 16		$O_2 = 16 \times 2 = 32$
$NaHO = 40$		$C_2H_4O_2 = 60$

100 c.c. ($=\frac{1}{10}$ of 1000) will, therefore, contain 4·0 grams of soda, and will neutralize 6·0 grams of acetic acid. Then, since 18·2 grams of acid. acetic., B.P., are neutralized by the same quantity, they will contain 6 grams of real acid.

Then 100 will contain 32·9, for 18·2 : 100 : : 6 : 32·9. And 32·9 is practically the same as 33.

Pure acetic acid should give no precipitate with sulphuretted hydrogen, showing the absence of lead and copper; with chloride of barium, showing the absence of sulphuric acid; nor with nitrate of silver, showing the absence of hydrochloric acid. Sulphurous acid is tested for by the last test given in the B.P.; it operates thus,—the zinc and hydrochloric acid give hydrogen; whilst in the "nascent state," that is at the moment of being set free, this hydrogen attacks any sulphurous acid present, and converts it into water and sulphuretted hydrogen:—

$$H_2SO_3 + 3\,H_2 = 3\,H_2O + H_2S.$$

The latter, as it escapes, blackens the acetate-of-lead paper.

Acetates, as a rule, are very soluble. They are easily recognized by giving a reddish-brown solution with a ferric salt (see tinct. ferri. perac.), by evolving an acetic odour when treated with sulphuric acid, and by giving, when boiled with alcohol and sulphuric acid, acetic ether, known by its agreeable odour.

ACIDUM ACETICUM GLACIALE, *Glacial Acetic Acid* is probably prepared in several ways. It may be made by distilling dry acetate of soda with strong sulphuric acid, but the product so obtained is always contaminated with sulphurous acid. Another method consists in decomposing dry acetate of lime with hydrochloric acid gas passed through it in a suitable apparatus:—

$$Ca(C_2H_3O_2)_2 + 2\,HCl = CaCl_2 + 2\,HC_2H_3O_2.$$

And another, a very good process, consists in distilling the so-called binacetate of potash. This compound is easily made by dissolving acetate of potash in strong acetic acid and distilling; the receiver is changed as soon as the weak acid has distilled off and the crystallizable acid begins to condense. Binacetate of potash contains the elements of the ordinary acetate united with those of acetic acid, $KC_2H_3O_2$, $HC_2H_3O_2$; on application of heat, the latter distils off and leaves the neutral acetate, which can, of course, be used over again for the same purpose.

The Pharmacopœia describes it as concentrated acetic acid, corresponding to at least 84 per cent. of anhydrous acid, $C_4H_6O_3$.

The necessary calculation is made somewhat as follows:—Two molecules of acetic acid, deprived of H_2O, give the anhydride $C_4H_6O_3$.

$$2\,C_2H_4O_2 - H_2O = C_4H_6O_3.$$

$$\begin{array}{rlcrl}
\text{Now } C_2 = & 12 \times 2 = 24 & \qquad & \text{And } C_4 = & 12 \times 4 = 48 \\
H_4 = & 1 \times 4 = 4 & & H_6 = & 1 \times 6 = 6 \\
O_2 = & 16 \times 2 = 32 & & O_3 = & 16 \times 3 = 48 \\
 & \overline{60} \times 2 = 120. & & & \overline{102}
\end{array}$$

So that 120 grams of acetic acid would give 102 grams of acetic anhydride. How much then would 100 give?

120 : 100 : : 102 : 85.

The B.P. says 84, thus allowing 1 per cent. for accidental water.

The tests by which its strength and purity are ascertained, are the same as for acidum aceticum.

Note.—It must be understood throughout these papers that whenever an acid is spoken of, it is a compound of one or more atoms of hydrogen with a peculiar radicle which is referred to. The peculiarity of this hydrogen is, that it can be replaced by a metal. Thus, $C_2H_4O_2$ is acetic acid; when allowed to act upon a metal it loses one-fourth of its hydrogen and takes to the metal instead, thus forming a new salt. In order to express this, the formula is generally written $HC_2H_3O_2$, which implies that the first atom of H can be displaced by a metal, but the other three cannot. For these reasons the body, which, in the B.P. is called anhydrous acetic acid, is incorrectly so termed, since it does not form salts by losing hydrogen, and combining with metals in the place of it. Acetic acid is called a monobasic acid, because in each molecule there is only one replaceable atom of hydrogen, and because, consequently, with each metal it forms only one salt.

CASES OF POISONING—ACCIDENTAL AND CRIMINAL.

Poisoning by Nitric Acid.—An inquest has been held on the body of John Francis Heath, a dyer at Sherborne, Dorset. It appeared from the evidence that he indulged freely in drink. He went to a tavern, where Mr. Yeatman, the landlord, showed him a bottle of some liquid purchased of a travelling hawker, for the purpose of cleaning harness, asking him if he could tell what it was. During the temporary absence of the landlord, he drank a portion of the contents of the bottle. It appears that more than an hour elapsed before medical aid was sought, and then it was too late, and the poor fellow died in great agony. The jury returned a verdict of "Accidental Death," censuring Yeatman for trusting a man of such intemperate habits with the bottle.

Accidental Poisoning by Laudanum.—On Saturday, May 7th, an inquest was held by Mr. W. Weedon, coroner, at Shaw, near Newbury, on the body of Frances Everett, wife of the Rev. G. F. Everett, Vicar of Shaw, who died on the previous day. The evidence went to show that deceased had suffered intensely from toothache, and had used various remedies for the relief of the pain. On Thursday morning, about two o'clock, she rushed upstairs, and called the cook, exclaiming, "Get up, I have taken laudanum in mistake for sal volatile." Dr. Palmer, the family medical man, was in prompt attendance, and found Mrs. Everett insensible. On examining the apartment, a decayed tooth was found in a basin, which appeared to have been extracted by Mrs. Everett herself. On a table was an empty bottle labelled "Laudanum—Poison," it had apparently contained 2 drachms; there was another bottle which had contained chloroform, and a third labelled "Sal Volatile." On a chair by the bedside was some wet cotton-wool, which smelt of laudanum. Dr. Palmer, with the assistance of Dr. Bunny, of Newbury, used the stomach-pump and other remedies, and, for a short time, the patient rallied, but afterwards became convulsed, and expired between ten and eleven o'clock on Friday morning. Dr. Palmer stated that 2 drachms of laudanum was not sufficient to produce a fatal result, but his supposition was, that Mrs. Everett had inadvertently mixed laudanum with chloroform instead of sal volatile, which would be quite enough to cause death. The jury returned a verdict in accordance with this view, to the effect that death was caused by the deceased having accidentally taken a mixture of laudanum and chloroform instead of sal volatile.

Poisoning with Belladonna and Opium.—A case is recorded by Dr. S. K. Cotter, of St. Helena, in the 'Medical Times and Gazette' of May 21st, of a lady who swallowed by mistake about an ounce and a half of the following liniment; extract of belladonna, gr. 120:—tincture of opium ℥ij, glycerine ℥iij, water ℥ij, misce. Although the symptoms were very severe, the patient completely recovered; had the same quantity, either of opium or belladonna, been taken by itself, the result would most probably have been fatal, and Dr. Cotter considers that the recovery in this case can only be accounted for on the supposition of mutual counteraction.

MISCELLANEA.

Milk a Preservative against Lead Poisoning.—M. Didierjean, a red-lead manufacturer, has discovered that the use of milk at their meals, which he has made obligatory on his workmen to the extent of one litre daily, preserves those employed in lead works free from any symptom of lead disease. He vouches for the truth of this communication.—*Journal of the Society of Arts.*

The Toxic Action of Quinine.—The following case is recorded in the 'British Medical Journal,' November 13th, by Mr. W. B. Hemming:—"I prescribed for a lady, advancing in life, who was recovering from an accident, a mixture containing 1 grain of quinine in each dose. The next morning I received an urgent request to visit her, as she had passed a sleepless night, and a rash had shown itself all over the body. I found the rash was as vivid as in scarlatina, and attended with intolerable itching; there was slight puffiness of the face, but no œdema elsewhere; a white tongue, and slight uneasiness in the præcordia. My patient immediately said, 'I know this is the quinine, as it occurred twice before, and more severely, when I took it in France some years ago.'" A minute inquiry as to diet, etc., failed to show anything to account for the rash. The rash and irritation were persistent for several days, and then slowly subsided, followed by universal exfoliation of the cuticle. The patient took only two doses of the mixture. The above action has been corroborated by the record of several other cases.

Bronze Powder.—After referring to the history of the first application of the scraps and waste of what is commonly called tinsel, or Dutch gold (none of it was or is ever made in the Netherlands; this industry is confined almost entirely to Bavaria), the author treats of the mechanical means whereby the metal is brought to leaf and powder. There are three chief alloys in use, which are designated by the name of the colour, the composition of these being, in 100 parts:—For the light shade—copper, 83; zinc, 17; for the deeper shade—copper, from 90 to 94; zinc, from 10 to 16; for deep copper-red, no zinc at all. Copper may be obtained, in a finely-divided state, by the following chemical means:—By igniting a mixture of chloride of copper, carbonate of soda, and sal ammoniac; by precipitating a solution of acetate of copper by means of sulphurous acid; by decomposing suboxide of copper by means of sulphuric acid; by electrolysis of a solution of sulphate of copper; by precipitating a solution of the last-named salt by means of a bar of iron wrapped up in filtering-paper or coarse cotton tissue; but all the metal thus obtained is hard and crystalline, and unsuitable for the purposes it is intended for as bronze powder. The author found that, when oxide of copper, such as is used for elementary organic analysis, is submitted, hot, to the action of the vapours of ligroine (a light petroleum oil or spirit), it is obtained in an excellent condition, and 100 kilos. of oxide require, for reduction at red heat, only 8 kilos. of ligroine.—*Chemical News, translated from Bulletin de la Société d'Encouragement pour l'Industrie Nationale.*

A New Kind of Wine.—Dr. Thudichum, in his lecture on wines at the Society of Arts, introduced a new wine which had been made from *tea*. He stated that the wine was a good stomachic, and would probably be useful both in ordinary diet and as a medicinal remedy.

New York College of Pharmacy.—At a recent meeting, the following gentlemen were elected Honorary Members:—Daniel Hanbury, F.R.S.; Henry Deane, F.L.S.; and Professor Attfield.

Immunity of a Monkey to Strychnine.—A case is recorded in the 'Medical Circular,' quoted from the 'Indian Medical Gazette,' of an attempt to poison a lungoor (*Presbytis entellus*) with strychnine. One grain was concealed in a piece of cucumber, which the animal ate; after waiting some time, and finding no effect produced, three grains were given in the same substance, and the monkey appeared to relish the meal. To test the strychnine three grains were administered to a dog, with the usual fatal effect. It is supposed that the monkey may take strychnine with impunity, as is said to be the case with some of the lower animals with regard to other poisons; for instance, the alleged impunity of pigeons to opium; goats to tobacco; and rabbits to belladonna, stramonium, and hyoscyamus.

Explosion of Dynamite.—It would appear that, in spite of the assurance to the contrary, this substance is not free from danger. An accident occurred at Dünnwald, near Cologne, during the manufacture of about 2 cwt. of dynamite, by which fifteen men were blown to pieces, and the factory completely destroyed. The explosion, the cause of which is unexplained, was accompanied by a bright flash, and the shock, felt for a very great distance, was at first attributed to an earthquake.

CORRESPONDENCE.

Communications for this Journal, and books for review, should be addressed to the EDITOR, 17, *Bloomsbury Square.*

MR. DICKINSON AND THE SCRUTINEERS.

Dear Sir,—Although my name does not appear in the list of scrutineers, being compelled to leave early; yet I feel bound to express to you the indignation I feel at the dishonest conduct of Mr. Dickinson in tampering with the voting papers, and to assure you that I endeavoured to mark every vote precisely as he called them, and I believe the other two gentlemen did the same. I would also remark, that with regard to the system of examining the votes, although I was an utter stranger to it until appointed scrutineer, I think it very good, and if carried out *honourably* and fairly, mistake would be almost impossible. The one defect that struck me at the time was the power which the Chairman had of giving the numbers wrong, but this would be remedied by placing another gentleman at his side as a check upon him. As the other two gentlemen associated with Mr. Dickinson in the scrutiny were present to answer for themselves, and to clear their characters from any suspicion of complicity in the fraud, I thought it only right for me to do the same, and I repeat my abhorrence of the dishonest and unmanly act of which Mr. Dickinson stands self-accused.

I remain, dear Sir,
Yours most truly,
J. TURNER.

Aylesbury, June 2nd, 1870.

REGULATIONS FOR KEEPING AND DISPENSING POISONS.

Sir,—There is a slight omission in the report of what I said at the General Meeting of the members on the 18th ult., as given on page 796 of the last number of the Journal. Referring to the supposed difficulties in the way of observing the proposed regulations for storing poisons, I said that persons who kept arsenic in a cask in a cellar had only, in addition to the label "Poison," *to put over it a lid with a padlock.*

I think it material that the nature of the regulations should be clearly understood, and I hope that during the current year we shall all, by trying to observe them, see where the shoe pinches.

Your insertion of this correction of the generally excellent report will oblige,

Your obedient servant,
JOHN ABRAHAM.

June 6, 1870.

Dear Sir,—You were good enough to insert a short note from me in the present month's Journal, and I should have liked to ask our members present at the meeting on Wednesday last what they thought of that recommendation; but the heat of debate was so great, and so many were anxious to speak upon the subjects before the meeting, that I could not manage to ask my little question without fear of being out of order.

Whilst on the subject of poisons and poisonings, I should like to offer another piece of advice. Although a staunch Conservative in most things, there is one ancient institution in connection with our trade that a little reform, and it is a *very* little reform, would do good in. I allude to the keeping of our bottles in the exact relative positions they usually occupy. From a tolerably large experience, I am convinced we get into a mechanical way of reaching down bottles when dispensing in a hurry. And the only remedy I can at present think of is, when dusting bottles, to change the position of every two bottles on our shelves occasionally backwards and forwards, so as still to keep them in about the same position they have occupied so long. One would soon cease to act mechanically, and always use the eyes when reaching a bottle down, whether it be a poison or not.

I have long ceased to keep my bottles in the exact alphabetical order in which I first arranged them,—an arrangement which placed side by side two such associates as tinctura opii and tinctura rhei. I just took out the tinct. opii and changed places with the tinct. aurantii, and have felt very much more comfortable since.

A gentleman at the meeting, in speaking of the burthen of the Council's regulations, asked if they would affect apothecaries and medical men. Of course they do not; but if I may judge from two surgeons' labels which have lately come into my hands, they are a trifle more particular than we were inclined to give them credit for in matters of dispensing.

The two labels are the following, the first of which I think will be quite a novelty to most of your readers; and the second, to my mind, is a very sensible label, knowing as I do, that a large number of physic-takers manage to swallow eight doses of physic at five or six times.

PURGATIVE MEDICINE.

spoonfuls every
hours till it operates.

(Keep the medicine very cold, away from the fire, and out of the sunshine.)

This mixture must be carefully measured.
The bottle contains doses.

I am, dear Sir,
Your obedient servant,
JOSEPH LUCAS.

Birmingham, May 19th, 1870.

HOMŒOPATHIC MEDICINES.

Dear Sir,—Being myself an allopathic chemist, with no faith in homœopathy, and yet guilty of selling homœopathic medicines, I beg to offer a few observations on Mr. Giles's second letter. Although I have no faith in homœopathy I must frankly admit that I have seen, amongst the circle of my own private acquaintances, several cases in which the ailment from which the patients have been suffering has disappeared, whilst they have been taking homœopathic medicines, in such a way that had they been taking allopathic remedies every allopath would have ascribed their recovery to the virtue of the medicine they had taken. Several times customers who have noticed the case of homœopathic medicines on my counter have asked what my opinion of homœopathy is? and my reply has always been that I have no faith in it myself, but that I am ready to supply those who believe that they derive benefit from homœopathic remedies. Most certainly I do not feel the traffic in homœopathy to be, as Mr. Giles suggests, "inexpressibly painful," neither do I feel it to be in any way "a degradation" to myself or to my calling. If I saw that a homœopathic customer was seriously suffering for want of more potent remedies, I should most strenuously recommend him to resort to allopathic treatment, and I have done so, but so long as my homœopathic customers seem to be none the worse for their adherence to homœopathy I hesitate not to supply them with homœopathic remedies, and I consider myself perfectly justified in carrying on a traffic in homœopathy upon such principles. I believe that homœopathic globules will do no harm, even if they do no good, and that is more than can be said for many of those recipes handed down from one to another, which we have all met with, and which Mr. Giles and his assistants would probably dispense if brought to his establishment. I don't mean to insinuate that Mr. Giles would prepare the more villainous of these compounds, but I think there are many English receipts which are by no means innocuous, and yet would be prepared by Mr. Giles, although he so strongly condemns allopaths for vending the harmless homœopathic globules.

Mr. Giles has never known bread-pills prescribed, but his remarks seem to imply that he considers if they were ordered, such a prescription should be dealt with in the same way as he would deal with an order for homœopathic globules. I have never myself seen a prescription for bread-pills, but some years ago I dispensed a mixture from a Latin prescription which contained nothing but saccharum ustum and mistura camphoræ. This is unquestionably an analogous case. The patient came repeatedly for a supply of this mixture, and if he had not progressed favourably I should most certainly have told him faithfully that the mixture he was taking could not possibly do him much good, but as he gradually got better I just dispensed the prescription, and made no remarks upon it, leaving it to the prescriber to be the best judge as to whether his patient really needed active remedies or not.

In replying to Mr. Marshall's letter, Mr. Giles disowns Morrison's pills, but admits that he does sell Parr's pills, etc. Now I doubt not but Mr. Marshall would agree with me, that his arguments would not be the least impaired by substituting Parr's pills for Morrison's pills, and, as Mr. Giles virtually admits dealing in Parr's pills, the validity of Mr. Marshall's argument now rests upon an admitted fact, and not upon an hypothesis, and thus becomes, I think, incontrovertible. I certainly was astounded to find that a pharmacist of Mr. Giles's standing should say, "As for Parr's pills 'et hoc genus omne,' they are at all events based upon rational principles of therapeutics, such as pharmacy acknowledges." Now the principles upon which the system of patent medicines is established are, that one medicine is a specific for all sorts of disorders, and that the compound which suits one person will be suitable for all who are afflicted with the same malady, whatever the peculiarities of their condition or constitution may be, and these principles are most certainly repudiated, and not accepted by pharmacy. Mr. Giles's opposition to the sale of homœopathic medicines by allopaths is as "Quixotic" as any crusade that could be raised against patent medicines, and there is as much "arrant folly" in the system of patent medicines as in homœopathy.

Mr. Giles asserts that "Homœopathic practitioners do not *now* trust to homœopathic doses." A case recently came under my notice: a homœopathic physician had charge of a lady in a very precarious condition, and the medicines which he prescribed for taking internally were dispensed at a homœopathic pharmacy, but a prescription for a gargle was sent to me; it was—

R. Potassæ Chlorat. ʒss
Aquæ ℥viij
M. ft. gargar.

The lady progressed favourably, and ultimately recovered, and if the prescriptions for the mixtures were written on the same principle as the above, which I dispensed eight or nine times, the physician most certainly did rely upon homœopathic doses.

There are several remarks in Mr. Giles's letter which doubtless he would never have written had he been recently employed in a London business.

I enclose my card, and am, Sir,
Yours faithfully,
S. S.

Holloway.

Cutting Prices.

Dear Sir,—Having attentively read the correspondence appearing from time to time in the 'Pharmaceutical Journal' on the great want and importance of uniformity in the professional charges for dispensing prescriptions, I desire to furnish another instance of this, occurring here last week, which perhaps you may think worth publishing in the next issue of the Journal.

The following prescription was presented to be partially dispensed (half the quantity of the powders only), for which the applicant tendered a shilling, stating "he had never been charged more." The prescription is stamped with the addresses of several chemists, London and country, and one a pharmaceutical chemist by examination, where I presume it has been dispensed.

R. Pulv. Alumin. Sulph. gr. xij
Pulv. Cubebæ ʒij. M.
Fiant Pulv. Mitte xxiv.
Capiat j ter die.

R. Alum. Sulph. gr. iv
Decoc. Tormentil. ℥iv. M.
Fiat injectio ter in die utend.

Now, Sir, I believe that in nineteen out of twenty pharmaceutical establishments, rural or metropolitan, if a person applies to purchase the quantities of each article ordered in the above prescription separately, he will be charged more than a shilling for them at the ordinary retail prices.

One of the parties whose name appears on the prescription being a "pharmaceutical chemist by examination," having thus (if our applicant stated the truth) lowered the standard of our profession, of what value will the "diploma" be to future members if this system is to be followed? and under present circumstances this *must* be the case, or they must submit to see their share of business swallowed by the *cutting* dispenser. I am an old member of the Society, have no greed for an exorbitant scale of charges, and having been many years engaged in business as a pharmaceutical and dispensing chemist, can as well afford to *work for nothing* as most of the young aspirants for future diplomas, or those who have recently obtained it; but I ask them to pause and consider whether it is not a suicidal policy to transact their business in this unnecessarily unremunerative manner.

The matter is a serious one, and should be at once dealt with vigorously, and with no unsparing hand; for such a system, if perpetuated, bids fair to shake the very foundations of pharmaceutical status, and reduce the operations of its votaries to the level of the "cheap John" system.

S. S.

Sir,—As our Journal is shortly to appear in a new form and to be sent out under fresh regulations, I cannot refrain from expressing my sense of personal indebtedness for instruction and entertainment derived from the past numbers of the present series.

I have often thought a great privilege is afforded to us in the amount of space which is month by month placed at the disposal of correspondents, and I sincerely hope that in the new series this very interesting department will still be maintained.

If I might be allowed to say a word or

two about correspondence, I would say we want help, guidance, and information, in as large quantities as we can get them, and the less of controversy the better. We can spend our time, and the pages of the Pharmaceutical Journal may be occupied, with more advantage than in writing hard things against each other.

I may or may not consider it right to sell homœopathic medicines, but it must be left to every man's own judgment to determine; for it is difficult to see how my brother chemist can in any way be affected by it, and he certainly is not justified—

"In compounding for sins he is inclined to,
By damning those he has no mind to."

An opinion as to its policy may be admissible if properly and judiciously expressed. But no man, whatever his position in the trade, has any right to send his *ipse dixit* throughout the land.

Now with regard to an increase of prices, it is an absolute necessity that something should be done in this respect; many of us labour comparatively in vain, and almost spend our strength for nought. Well, how are things to be mended? that is the question. The only remedy I can see is to have associations in each large town or district, and to have the prices arranged on something like a uniform scale. We cannot expect to establish West-End charges throughout the kingdom, but there might be a great improvement effected in this respect.

Not only are our charges too low for dispensing (which, by the bye, I believe is in many instances the worst paying department of all), but this applies also to the sale of drugs: for instance, sweet nitre, 3*d*. per oz., tinctures, 3*d*. per oz. I lately saw a bottle sent out *by a pharmaceutical chemist by examination*, labelled "Paregoric Elixir, *warranted to contain no opium*," and having something of the appearance of London milk, largely diluted with water; price for the bottle, containing 20 oz. was 3*s*. How paregoric can be called such that contains no opium I cannot understand; and with men who will resort to such practices not much can be done, unless they are punishable by law for adulteration.

Another customer was lost to me because I would not make up an 8 oz. mixture containing (*according to the prescription*) "ʒivss Liq. Opii Sed. Batt." with other ingredients, for 10*d*., the price the patient's father had been paying at two different chemists' shops for the same, and which I have every reason to believe to be a true statement. Such a state of things could scarcely exist under any system of association properly carried out.

Another point I would call the attention of my brother chemists to, is a matter they have in their own hands. Do not give a place in your establishments to proprietary articles which do not yield a good profit. We have a right to expect that those who bring out these commodities should arrange the prices so as to leave a fair margin of profit for the retailer, who, in the case of many of them, often has to see them in stock a long time, and too frequently has to sustain loss from breakage, soiling, etc.

In conclusion, let me say my object in sending you these crude remarks and suggestions is entirely with the hope that something may be done to make the drug trade a more desirable pursuit for those young men who are now expected to go through a scientific training before entering it.

Yours respectfully,
One who has Known the Drug Trade more than Thirty Years.

Citrate of Magnesia, so called.

Sir,—The very wide margin of prices that exists, for the article commonly called citrate of magnesia, would lead the better informed members of the trade to conclude that there probably existed also an equally wide range in the quality, notwithstanding the oft-repeated asseverations, that "the article offered is as good as any that can be manufactured." It was this reflection, coupled with the fact that I have never been thoroughly satisfied that these cheaper kinds did come up to the standards of excellence required, that induced me to give some little attention to the subject, with a view to find a tolerably ready means of determining the quality of this preparation, in a more definite manner than by the taste.

It will be found that the quality of the article for producing an agreeable effervescing draught, depends entirely on the amount of carbonic acid it contains, and the quantity is influenced by two causes:—First, bad manufacture; secondly, deficiency of bicarbonate of soda, this being rendered necessary by the addition of sugar, as well as to economise tartaric and citric acids. Hence the estimation of the carbonic acid gives the key to the whole problem. There is a considerable loss of the gas in the process of manufacture, and therefore a bad workman may greatly deteriorate an otherwise good preparation; but still the test given will be found the measure of its quality.

Yours respectfully,
F. M. Bimmington.

Bradford, May 2, 1870.

Preservation of Eggs.

Sir,—The preservation of eggs by chemists and druggists is not of general occurrence, yet, as a rule, they are expected (professionally) to know, not only how to preserve eggs, but everything else. In this instance I am able to favour your correspondent, B. Shaw, with the information required, having tested the efficacy of the method many years, —the eggs retaining their sweetness, and the shell its natural state.

It is necessary that the solution be boiled ten or fifteen minutes, and when cold put in the eggs, small end downwards, using a vessel lined with lead, and placing in a cold but dry cellar—

℞. Quicklime 1 lb.
Salt 1 lb.
Saltpetre 3 oz.
Water 1 gallon.

E. P. H.

Sheffield.

Sir,—In answer to the queries about the preservation of eggs, the following will, I think, be found to answer well:—The shells are not softened as in simple lime-water, but hardened, and the yolk and albumen thereby kept in something like their natural condition. To one gallon of boiling water add one ounce of cream of tartar, add to this, when cold, a piece of newly slacked lime, about two ounces; after standing a short time, put the eggs into the clear liquor, taking care they are covered; in a short time an abundance of small crystals will be deposited on the eggs—I suppose tartrate of lime. Be it as it may, the eggs keep well.

Yours, etc.
CHEMICUS.

Sheffield, May 4, 1870.

CHLORODYNE.—ITS COMPOSITION.

Sir,—It is rather clear our "Provincials" have left the composition of chlorodyne question pretty much where it was at first; and the clinical test or that by which we observe the action of chlorodyne on the sick, will help us more than pharmaceutic speculation as to belladonna or tobacco. There is still another side of the question, if we turn it round, whether the profession ought to patronise secret formulæ. Is it one of the "frailties of the faculty" that they do? All the chlorodynes are obviously most dangerous and fatal to life in unwise doses; but your Journal deserves great credit for at least letting medical men know what they will have to treat in poison cases or overdosing by this agent.

I am, etc.,
CHARLES KIDD, M.D.

Sackville Street, June.

PRELIMINARY EXAMINATIONS.

Dear Sir,—Having had some considerable experience in preparing students for Preliminary examinations, whether pharmaceutical or otherwise, may I be permitted to say a few words on the remarks made in the May number of your Journal?

"A Voice from the Preliminary" has given much useful information both to teachers and students, but I fail to see the force of his argument about the Latin. A slight calculation will show, from his own figures, that whereas more than three-fourths passed in this subject in the first examination, not two-thirds passed in the second, and only a few more than one-half in the third.

Having carefully studied the Examination Papers from the beginning, I attribute the increased number of failures to the increased difficulty of the questions. With the exception of the last, the papers were more difficult as they succeeded each other; but, in my opinion, the paper for the April examination was of a simpler description than any previous one.

Would it not be worth the attention of the Board of Examiners, that a certain equality of value should obtain in all the papers? My own conviction is, that many failures have resulted from the absence of this uniformity. Of course, no one could reasonably expect one set of questions to afford any clue to another; but I think it more than probable that intending candidates make themselves acquainted with questions in previous sets, and from these argue their competence to pass a succeeding one. Hence, if the questions be increasingly difficult, the numbers of failures are proportionate; but it is to be hoped that the nature of the last set may be regarded as an acknowledgment of this evil, and a practical proof of a determination to remedy it.

Trusting you will not consider my remarks too dogmatic,

I remain, dear Sir,
Yours respectfully,
N. H.

May 4th, 1870.

DATE'S OINTMENT.

Sir,—In answer to T. S., Date's (eye) ointment is an ointment prescribed many years ago, by the late Dr. Date, Bristol. It was zinc ointment, coloured with vermilion, and perfumed with ol. origani.

F. PROWSE.

368, *Stretford Road, Manchester.*

OXFORD MEMORIAL.

Sir,—You will greatly oblige by stating in your supplementary number of the 15th, that the memorial (Pharmaceutical Journal, p. 753) read before the Council on the 13th ult., bore the signatures, not only of the Oxford, but also of the Abingdon chemists.

Your omission as to Abingdon was probably due to the fact that the signatures from the latter place were upon the second half of the memorial sheet.

Yours truly,
JOHN THROSSELL.
10, *Magdalen Street, Oxford,*
June 2nd, 1870.

TABLESPOONSFUL OR TABLESPOONFULS?

Please give opinion in next issue of Journal which of the phrases is correct, two tablespoon*s*ful or two tablespoonfu*ls*.

Yours, etc.,
QUERY.

[We think the latter the more correct.]

PHARMACY AND MEDICAL REFORM.

Sir,—Now that medical reform is occupying some attention, permit me to suggest that it would be very desirable for the interests of pharmacy, if something like the following regulations could be carried:—

1. That pharmacists preparing for a medical qualification shall be allowed a reduction of one year's time.
2. That no medical practitioner shall use the title of doctor of medicine, or physician, while in the habit of dispensing.

I am, Sir,
Your obedient servant,
MONTAGUE J. R. HOSKING.
Southampton, June 1st.

SHOULD COUGH LOZENGES BE LABELLED "POISON"?

Dear Sir,—Oblige by stating if it is necessary to label cough lozenges, containing a preparation of morphia, "Poison."

F. M. R.

[We think the best answer to this question is the reply of the medical officer to the Privy Council to a communication from the Council of the Pharmaceutical Society, which will be found at p. 567 of Vol. X., N.S., of this Journal.]

"*A Poor but Genteel Chemist*" suggests as a remedy for the depressed state of the drug trade, especially in suburban districts, that the sale of drugs should be confined to registered chemists and druggists.

"*Inquirer.*"—We know of no authorized formula for *liquor ferri ammonio-citratis*. Beasley, on the authority of Beral, gives a formula for *liquor ferri citratis*. Our correspondent asks for the best scientific account of the exhibition known as "Pepper's Ghost"?

R. R. (Plymouth).—*Brown Hair Dye*. In reply to our correspondent, we give the following from the 'Chemical News:'—"On a Brown Hair-dye. G. M'Donald.—Under this title the author, in reality, makes known a fact which is worthy of notice; he says, the well-known fact that a soluble compound of lead and sulphur could not be obtained by the decomposition of a soluble lead salt by a soluble sulphuret, or, in other words, the insolubility of the sulphuret of lead was regarded as an indubitable proof of the folly of undertaking to search for a compound containing sulphuret of lead in a soluble state, and yet so as to be innocuous to the system. There is a class of salts known as hyposulphites, many of which are freely soluble in water, and which are readily converted by absorption of oxygen into sulphate of the base and free sulphur; it is in the use of these salts that the key to the enigma lies. Chemical text-books state that hyposulphite of lead is insoluble in water, which is quite correct; but, like many other precipitates insoluble in water, it is readily dissolved by an excess of the precipitant; thus, if we add to a solution of *three* parts of acetate of lead, *two* parts of hyposulphite of soda, we shall have a curdy white precipitate of hyposulphite of lead, insoluble in water; but if we add to this *ten* parts more of hyposulphite of soda the precipitate will be re-dissolved, and a perfectly clear solution will be the result; this solution, when applied to the hair, is decomposed by absorption of oxygen; one of the results thereof is the formation of the dark brown sulphuret of lead; it is to the formation of this compound in the hair that all lead and sulphur dyes owe their efficacy."

"*A Victim*" "wishes to caution our readers against an agent of a Life Insurance Company, who is actively engaged in calling upon medical men and chemists about London, and requesting them to become medical referees or local agents, as the case may be, of a particular district, making it a *sine quâ non* that a policy of insurance be effected upon the life of the party affected."

Instructions from Members and Associates respecting the transmission of the Journal should be sent to ELIAS BREMRIDGE, Secretary, 17, Bloomsbury Square, W.C.

Advertisements to Messrs. CHURCHILL, New Burlington Street, London, W.

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